SEP 16 1957

NINETY • NINTH YEAR

AMERICAN Gas Journal

B 680953

SEPTEMBER, 1957

Only Magazine Published Exclusively for the Gas Utility Industry

ROCKWELL
"1600"
ALUMINUM
METER
with "107-2" Service Regulator
(Capacity 1600 cfh at 2" diff. of 0.60 sp. gr. gas)

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They're All ROCKWELL Single Joint Aluminum METERS

NO. 150

NO. 250

NO. 310

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NO. 1600

NO. 5000

the LIGHT WEIGH to measure commercial loads

The Rockwell "1600" weighs just 63 lb. It is easy to handle and install. The sturdy aluminum alloy case has high impact resistance and will stand up under all kinds of weather. Single joint construction simplifies repairs; reduces leakage risks. Compact size and a generous capacity rating fit the Rockwell "1600" into many a measurement picture. You'll find it mighty useful for services such as motels, schools, churches and small plants. Write for bulletin.

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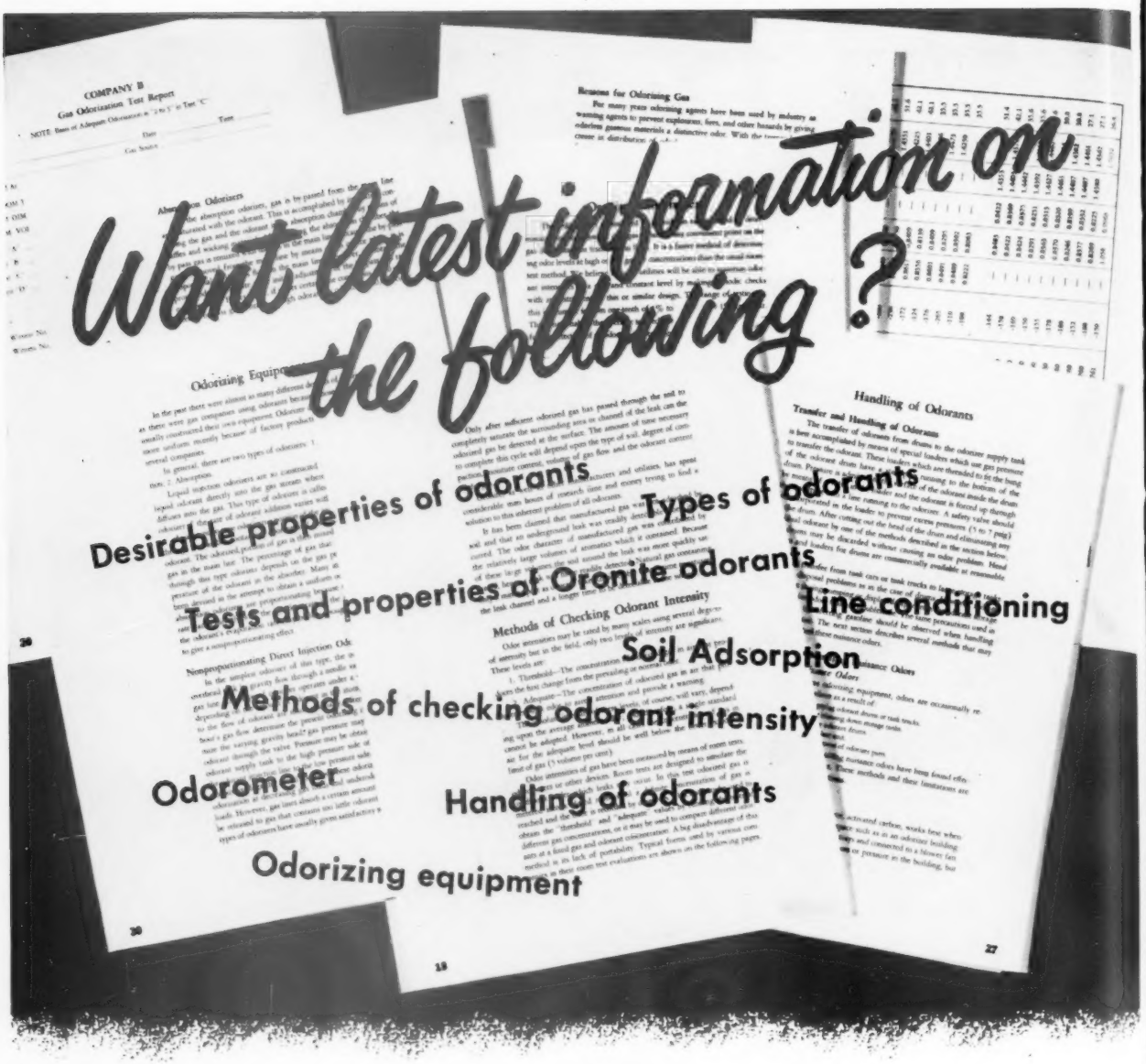

Write for Oronite's new GAS ODORANT technical bulletin!

Oronite, the major supplier of odorants to the natural and liquefied petroleum gas industries, now offers you the most comprehensive data ever compiled on gas odorants. Within the new 36-page Oronite Gas Odorant bulletin you will find the answers to odorization questions that may have puzzled you.

Today, and in the years ahead, you can look to Oronite for the finest odorant products and the most complete service. A phone call or letter to any Oronite office will promptly bring an odorant specialist to consult and assist you on gas odorization.

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4375

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At the dispatching center of Shell's products pipeline general field office, Indianapolis, scheduler Robert Formby collects data from remote pumping stations.

Teletypewriters give Shell dispatcher immediate readings from four remote pumping stations

"New Douglas station suction 60 pounds, discharge 600 pounds, motor load 100 amps . . ." that's what the teletypewriters above tell Shell Oil Company's Indianapolis dispatcher about operations at an unattended pumping station over 200 miles away.

Bell System private line teletypewriters connect the dispatcher with four remote stations on Shell's "east line," which carries 33,000 barrels a day from the Wood River, Ill., refinery to Illinois, Indiana and Ohio markets.

The dispatcher simply pushes the proper buttons and the distant station is instantly on the circuit. Data on the remote operation is then received on his teletypewriter. By pushing other buttons, he can also start and stop pumps at the locations.

* * * *

Accuracy, reliability and speed are three reasons private line services are widely used in the pipeline industry. A Bell System representative will gladly give you more information, study your own requirements at no cost to you. Just call your Bell Telephone Company business office.

BELL TELEPHONE SYSTEM

PRIVATE LINE TELEPHONE • PRIVATE LINE TELETYPEWRITER • DATA TRANSMISSION SYSTEMS
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AMERICAN Gas Journal

NINETY-NINTH YEAR

GAS TECHNOLOGY — OPERATIONS — EQUIPMENT — MANAGEMENT — UTILIZATION

VOLUME 184 — September, 1957 — Number 9

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YOU CAN GET MORE INFORMATION on 31 new and useful ideas or items of equipment developed for the gas utility industry. You'll find them on pages 48 through 52 . . . and to get more free information, use the handy reader's Ready-Reply Card bound in this issue. There's an extra card for your neighbor, too!

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Established July 1, 1859

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Memo From The Editors

In This Issue...

An LPG-Air plant for peak-shaving that has a capacity of 3,000,000 cu ft per hour is worth talking about. Location? At Public Service Electric & Gas Company of New Jersey's Harrison Gas Plant. It's the biggest of its kind in both capacity and area. More about it on page 14.

Extending dead end mains, particularly in older systems with insufficient valves for sectionalizing, is one of those tough operating problems. In Kansas City, Missouri, personnel of The Gas Service Company came up with their own solution ... the simple, economical "plate cut" method, described on page 21.

Nobody likes "chug holes," and there's no reason for them. Why make "temporary repairs" when you've completed work at a street cut? Rochester Gas & Electric has come up with a good answer to this problem — "permanent patching" that is less costly, does a better job, keeps motorists happy, and, most important, is fast. Turn to page 25.

Gas cools and heats the "world's most air-conditioned airport," the fancy new Love Field Terminal in Dallas. The all-gas heating and cooling installation will save the municipal terminal considerable money — a real civic achievement and a good selling point for large scale gas air conditioning. See page 29.

Is your company taking advantage of research results available from AGA? Minneapolis Gas Company is — and saving considerable money in so doing ... find out how in an important article beginning on page 31.

Letters

(Send your comments to The Editor, American Gas Journal, P. O. Box 1589, Dallas 21, Texas)

EDITOR:

"We wish to congratulate you on the thorough Reader Information Service as furnished in each current issue of your magazine.

"We also wish to state that we have never enjoyed so much reading a specialized subject publication as that provided by your monthly magazine."

F. Quintana, Vice President
Servicios Metropolitanos De Gas
Havana, Cuba

Ed. Note: Thank you, Senor Quinana. We're happy to learn that the Ready-Reply Cards bound in each issue of AGJ are of service to you. Several thousand other gas utility operating men feel the same way — as indicated by the wonderful response given this monthly service feature.

EDITOR:

"As a long-time reader of *American Gas Journal,* I wish to be one of the first to express my appreciation of the innovation which appeared in the August issue. I refer, of course, to the use of perforated pages.

"It certainly is a great help to those like myself who clip articles for future reference and the job is done much neater and quicker than with a discarded razor blade."

O. H. Simonds, Consultant
New York City, New York

Ed. Note: Response from readers like yourself, Mr. Simonds, assures us that we are on the right path in providing the small but important things that help our readers do a better job. All of the many comments we've received so far vote in favor of the perforated pages.

Fuel for Thought

Practically everyone in the gas utility industry agrees that, if the gas industry is to remain a strong contender for a major share of the energy market in future years, it must capture its share of the air-conditioning market — industrial, commercial, and residential. Industrially and commercially, the industry has fared reasonably well. In attempting to get its slice of the juicy residential cooling load, well, let's face it — the outlook might be bright but the current situation is awfully dim.

The announcement in August that the All-Year Air Conditioning Division of Servel had been sold to Arkansas Louisiana Gas Company of Shreveport, subject to approval by Servel stockholders, strikes a spark that sheds light on the problem. Arkansas Louisiana, an aggressive growing firm, is taking a big bite. It will pay $4-million for the properties it will acquire. It also agrees to pay Servel $200,000 a year for five years to serve as a consultant in the air-conditioning field. Servel, in turn, agrees not to compete with the business it is selling.

Our sincere hope is that Arkansas Louisiana management will do a better job with its new division than Servel has done. Servel has had a unique opportunity — the only major manufacturer of gas air-conditioning plus the whole-hearted assistance of the utilities, yet it apparently has never capitalized on this golden opportunity. It would take volumes to publish all of the reasons. These reasons could be boiled down to simply this — price is too high, promotion too little, sales effort too small.

People will buy gas air-conditioning. Every gas utility that has undertaken an aggressive gas air-conditioning marketing program has proven it.

Our congratulations to Arkansas Louisiana for taking this "big step." The entire gas industry is waiting to see what further developments and improvements will take place.

★ ★ ★

"What will happen to the gas refrigerator?" is the next logical question. In announcing sale of its air-conditioning division, Servel said it had had exploratory discussions with several possible purchasers of its Home Appliance Division, but no decisions had been reached. Here, too, let us hope that an aggressive firm will acquire this fine appliance — a firm that will be able to build it on mass scale, offer it at a reasonable price, and promote it with enthusiasm.

★ ★ ★

The 1957 PEP Commercial Gas Cooking Sales Campaign, sponsored by AGA and GAMA, gets underway in September for a three-month run. Aimed at getting commercial establishments to replace obsolete equipment with new, modern, automatic, efficient gas appliances and to sell new, needed appliances to inadequately equipped kitchens, the annual PEP (Performance-Economy-Profit) Campaigns are considered leading revenue producers among the many promotional projects undertaken by the gas utilities.

To guide utility sales managers, AGA's manager of commercial promotion, Hayes Walter, has issued an outstanding promotional guide — a complete outline with everything a sales manager would need (excepting, of course, energetic salesmen). Congratulations are in order for the exceptional job done by AGA. The rest is up to the utility.

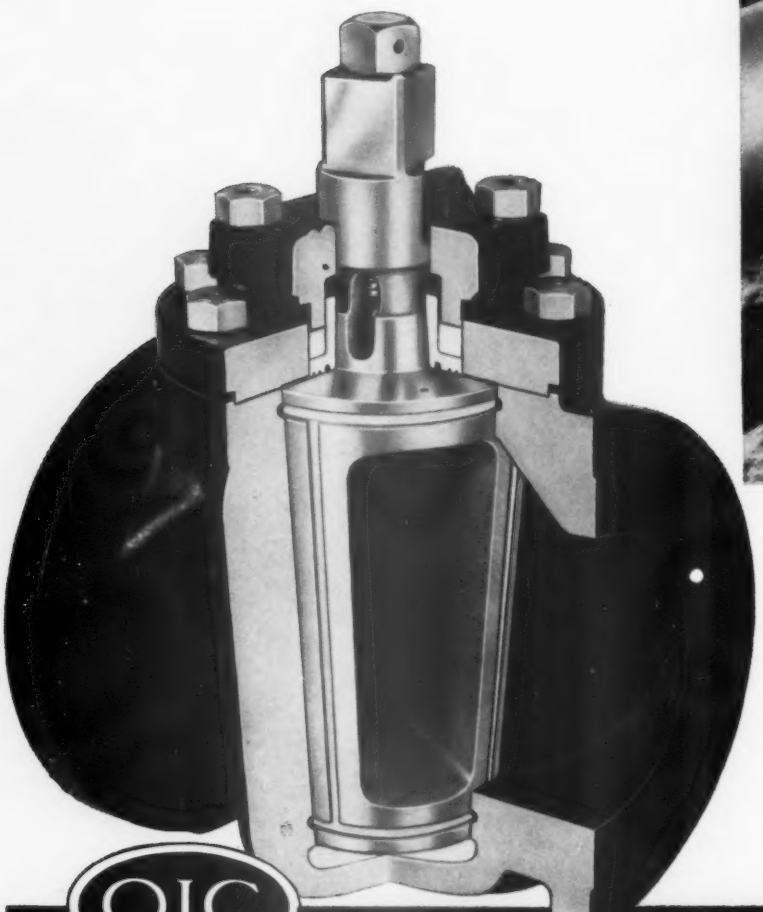
— The Editors

From well head t

All of your measurement and control e

Now, your American® representative can supply you with OIC valves and provide all the equipment required to measure, regulate and control gas flow from well head to burner tip. Working together, American's complete family of precision designed and engineered products, and OIC valves, bring you maximum efficiency, low maintenance cost and trouble-free service.

OIC LUBRICATED PLUG VALVES assure pressure-tight seating — dependable operation.



OIC Triple-Seal Valves

OIC lubricated plug valves are precision designed and engineered with an exclusive triple-seal to provide positive shutoff. OIC valves are stocked in quantity by American Meter Company, assuring prompt delivery.

OIC VALVES

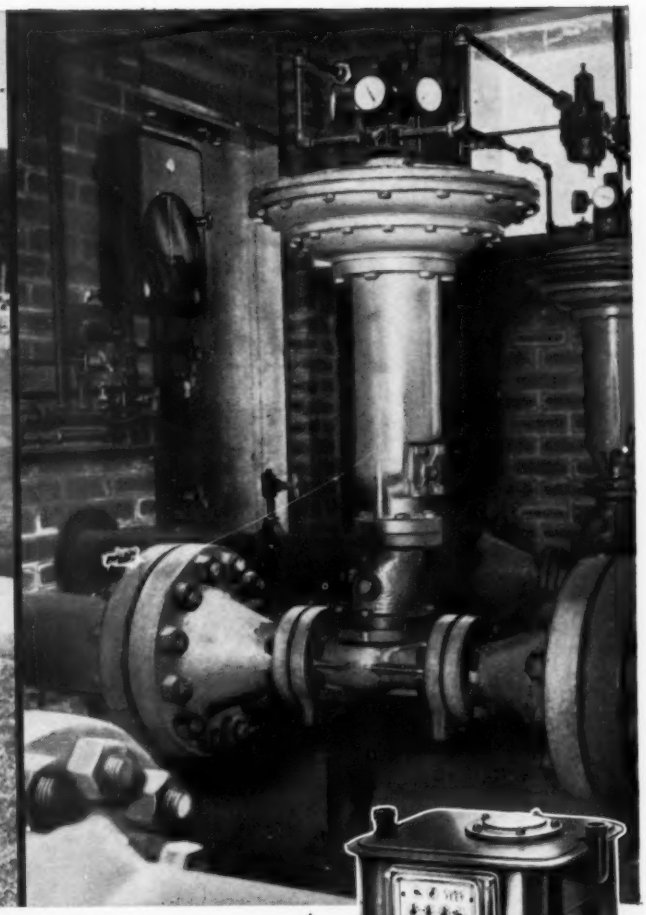
FORGED & CAST STEEL, LUBRICATED PLUG, BRONZE & IRON VALVES

Distributed to the Gas Industry by ....

to burner tip...

equipment from one dependable source

AMERICAN DRI-FLO METERS provide precision measurement of large gas volumes.

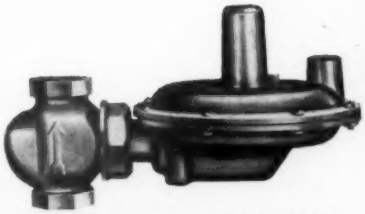


RELIANCE TYPE "P" REGULATORS reduce and accurately maintain system pressures.

American's Complete Line

American Meter Company has pioneered the advancement of all phases of gas measurement, regulation, control and testing of gases for more than 120 years. Today, American provides a complete line of meters, regulators, instruments, valves, test meters and apparatus for the Gas Industry.

For prompt engineering assistance and equipment for all of your measurement, regulation and control problems, consult your American Meter representative.



RELIANCE 1400 SERIES REGULATORS maintain precise pressure to appliances.

AMERICAN WELDED STEELCASE METERS assure new economies in displacement meter measurement.

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NEW! Superior A...

... the slow-motion meter you can rely on longer

Designed from scratch to take advantage of all the time-tested advances in meter technology... built in Superior's new plant to exploit all the latest meter design and manufacturing techniques... operating at only 7 revolutions per cubic foot to reduce wear and stay accurate longer... that's the story of the new Superior aluminum case meter.

And, when you *do* have to check it, meter maintenance is quick and simple. Whether it's adjusting the tangents through the handy access in the top... removing the top to grind the valve seats... or lifting out the valve table with the entire inner movement to replace the diaphragm, simply loosening a few screws makes everything accessible. Get full details on this modern meter today. Send for bulletin 1150.

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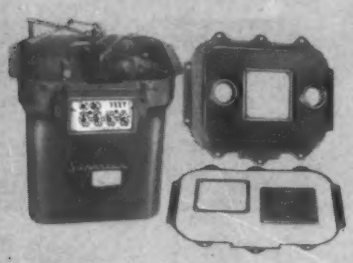
A SUBSIDIARY OF NEPTUNE METER COMPANY

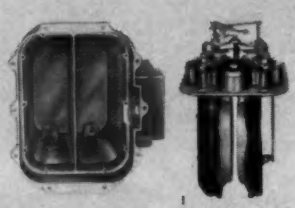
neptune

Look at these advanced design features:

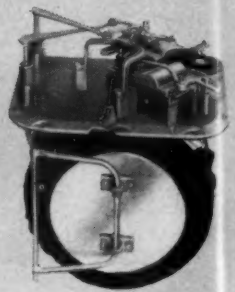
1. Simple, horizontal seam... eliminates leakage... easier maintenance
2. Easily accessible table... just remove the screws holding top



3. Valve seat readily accessible for grinding when top is removed
4. Meter top removable without taking off index box
5. Valve table lifts out with entire mechanism



6. Slow movement; only 7 revolutions per cubic foot
7. Cupped handling lids permit easy and safe carrying

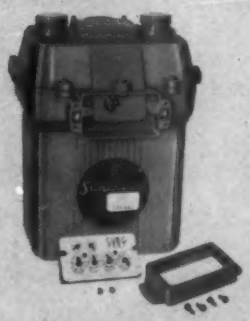


ALUMINUM CASE METERS

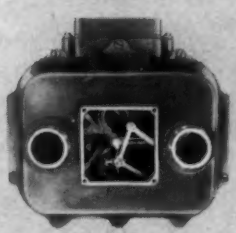
In 250 cfh and 340 cfh sizes to meet most domestic requirements.

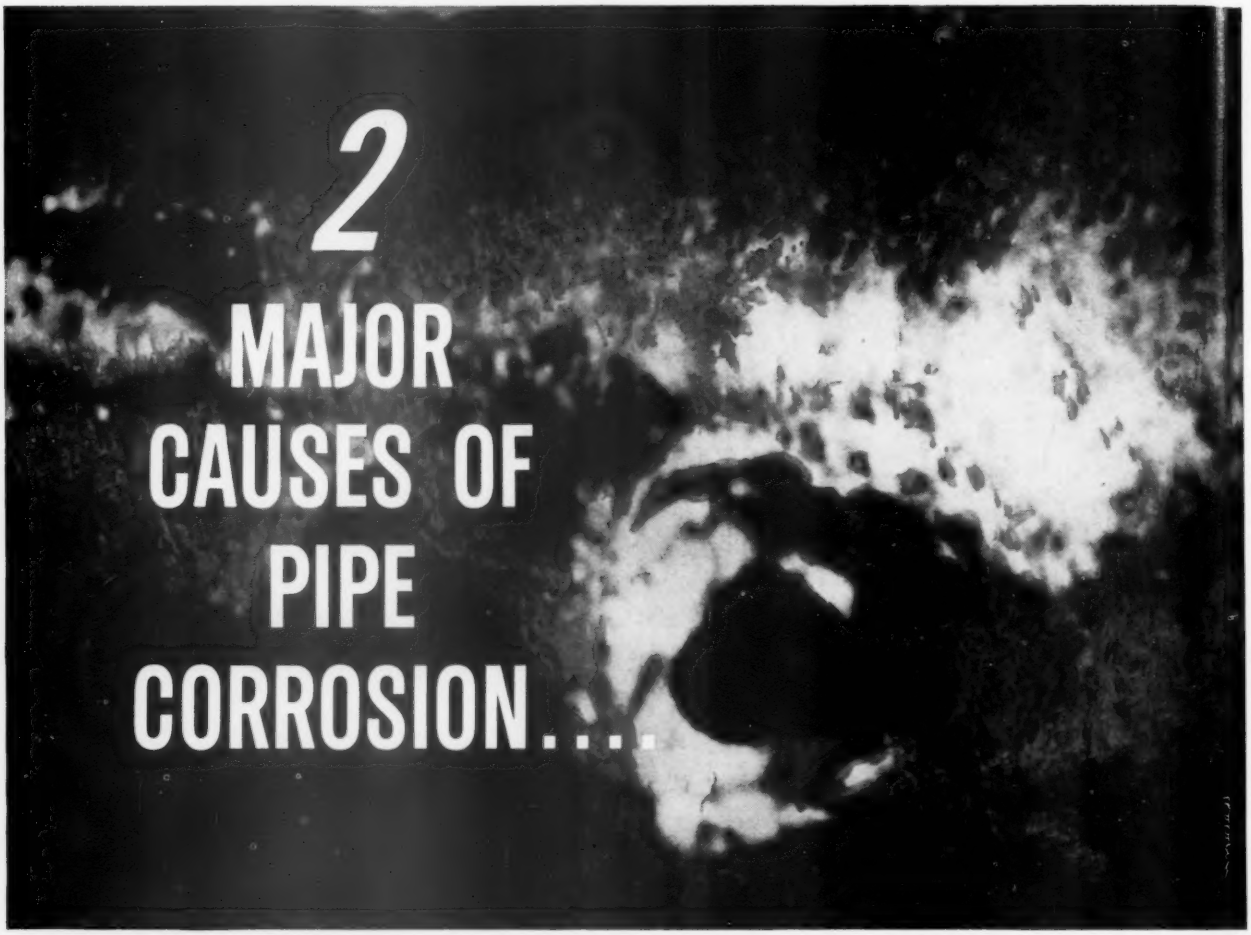
- Broad base for solid stacking ...designed for conveyorized handling
- Accurately controlled diaphragms... no inaccuracies from deflection
- Seam gasket stays resilient ...cork and Buna-N composition
- Heavy-duty, sintered bronze bearings oil-impregnated for life

12. Index removable without removing meter

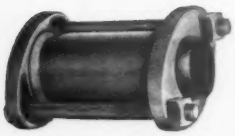


13. Flag arrangement gives arm smoother operation and longer life
14. Handy access for tangent adjustment and calibration

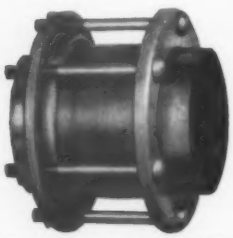




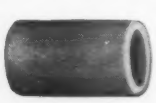
controlled by Dresser insulating couplings!



1¼" ID Style 39, showing two-bolt construction, supplied in sizes thru 2".



6" ID Style 39, showing construction supplied for this size. Note insulating gasket.



This new Dresser green Nylon Insulator will be supplied in all standard insulating couplings and fittings. Gives all-round improved efficiency.

The two major causes of corrosion: stray d-c electric current and dissimilar metals can be controlled by blocking off electric current and preventing its flow from one pipe length to another.

Proved in fifty years of service, Dresser Style 39 Couplings have rubber insulating gaskets compounded to assure optimum insulation and long life. The tough, inert Nylon Insulator is resistant to acids, alkalis, drip oils . . . will not swell.

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Dresser Style 39 Couplings are lower in cost and easier to install than insulating flanges. No painstaking pipe fitting, no cutting, welding, or lining up bolt holes is involved. Installation time — a matter of minutes. And *most important*, Dresser Couplings absorb normal pipe movement without leakage and *without disturbance of insulating qualities*. Write today for catalog describing Dresser Corrosion Control Products.

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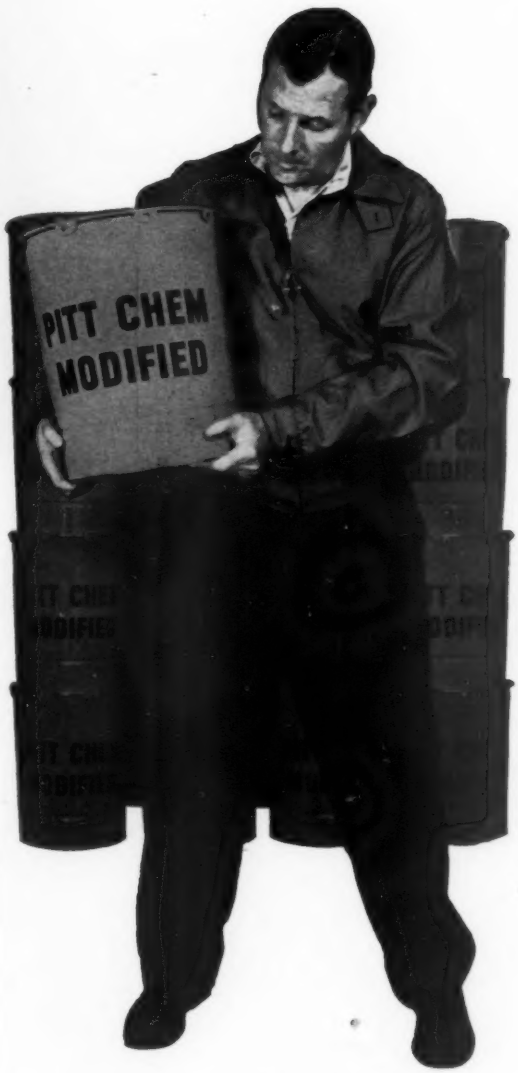

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For Easier Handling and Economy When You Patch or Coat Joints of Mill Wrapped Pipe

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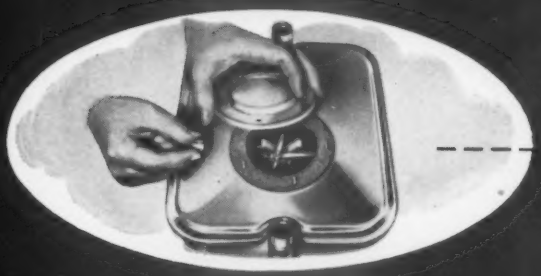
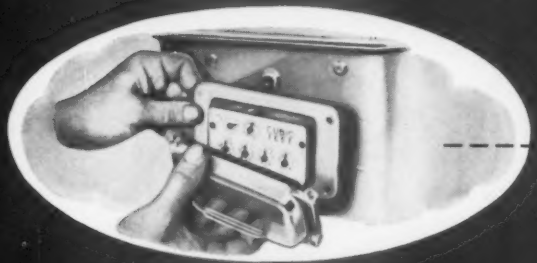
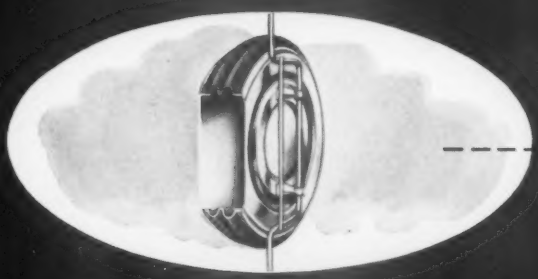
New Advanced Design AMERICAN® "W" series Steelcase Meters



Steelcase meter accessibility through easily opened handhole.



Interchangeable Index — external and isolated from pressure with gas-tight frictionless rubber grommet drive-shaft seal.



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- ★ **Proven Speed Ratio for "Sustained Accuracy"**
- ★ **Long Service Life at Lowest Maintenance Cost**
- ★ **New Lifetime Corrosion Protection Coatings**

And every American meter refinement developed in 120 years of meter engineering.

MODEL W-175

The unusual advantages of this new series by American open entirely new possibilities in meter maintenance and retirement.

W-75 Rated Capacity 75cfh FOB Philadelphia, W-45-LPG Rated Capacity 45*cfh FOB Philadelphia, W-175 Rated Capacity 175cfh FOB Fullerton Calif., W-210 Rated Capacity 210cfh FOB Philadelphia, W-250 Rated Capacity 250cfh FOB Philadelphia, W-300 Rated Capacity 300cfh FOB Philadelphia

*Propane.

Rated capacities based on 0.64 sp. gr. gas at ½-inch pressure drop—5 psi working pressure.

Consult your American Meter representative for full information.

AMERICAN® METER COMPANY
INCORPORATED ESTABLISHED 1836

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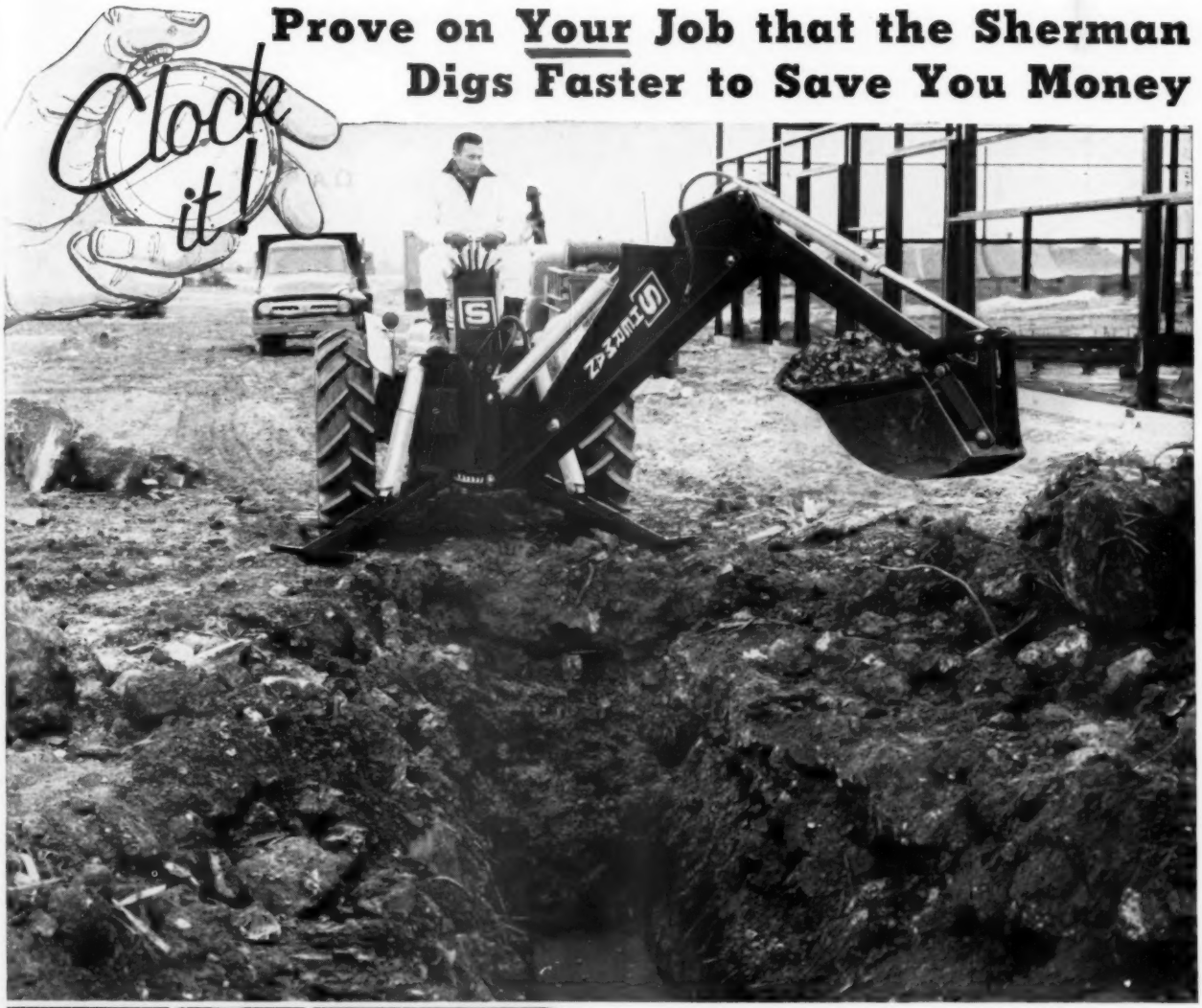

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Sherman S.P. Products

William Mergner
Design Engineer
Public Service Gas & Electric Company
Newark, New Jersey

FIG. 1. Harrison gas plant, located on the Passaic River, serves as base load plant for the interconnected gas manufacturing plants of northern New Jersey. Capacity of the plant is over 300,000,000 cu ft per day.

FIG. 2. LPG storage plant is located around the bend of the river from the Harrison plant. It has 24 tanks of 30,000-gal capacity each.

WITH the addition in 1957 of a fourth vaporizer and two gas-air jet compressors, capable of producing 3,000,000 cu ft of LPG-air gas per hour, the LPG-air plant of Public Service Electric and Gas Company's Harrison gas plant ranks as the largest facility of its type in the world, in both capacity and area.

Newest addition to Public Service's Harrison plant, the LPG-air plant and LPG storage plant began to take shape in 1953, when initial design work was begun. Actual construction began in 1954, after delay in obtaining permits from state and local authorities.

The Harrison Gas Plant has an effective capacity of 1,321,000 therms per day, or about 218,700,000 cu ft of 604 Btu gas per day, of which the LPG-air plant is a part. The Harrison plant, one of the largest and most efficient in the country, serves as the base load plant of Public Service's interconnected gas manufacturing plants supplying northern New Jersey. Other plants are located in Jersey City and Paterson.

Final product of the Harrison plant is a mixed gas, composed of carbureted water gas, thermal reformed natural blue gas, catalytic reformed natural gas, straight natural gas, natural-air gas, coke oven gas (purchased from a nearby Koppers coke plant), and finally, on peak load operation, catalytic reformed kerosine and liquefied petroleum-air gas.

Location of the plant, along the Passaic River and the Pennsylvania Railroad, provides flexibility in the handling of the major raw materials — generator coke, gas oil, boiler fuel, LPG, and natural gas.

Design of the LPG-air plant was by the gas engineering department of Public Service. Consulting services were provided by Roy M. Henwood Associates for the storage plant and by Drake and Townsend, Inc., for the LPG-air gas jet plant.

With the exception of usual minor difficulties normally expected in a project of this size, the plant has operated successfully in the winters of 1955-56 and 1956-57.

Experiences with the plant have been good, and installation is underway nearing completion on a fourth vaporizer and two additional jets provided for in the original design. The plant's capacity prior to this expansion has been 2,000,000 cu ft per hour, and the additional vaporizer and jets will boost this to 3,000,000 cu ft per hour.

3,000,000 Cu Ft Per Hour!

Largest LPG-air gas plant, in both capacity and area, provides peak-shaving gas for northern New Jersey customers of Public Service Gas & Electric Company of New Jersey

Storage Plant

The storage plant consists of an installation of 24 propane tanks of 30,000-gal capacity each, and one butane Hortonsphere with a total storage capacity of approximately 1,100,000 gal. A tank-car unloading station designed to accommodate 10 railroad cars and facilities to unload or load two transport trucks, have been installed.

Tanks. Arrangement of the tanks is shown in Fig. 3. The tanks are provided with two manways. The front manway, being the operating manway, contains connections as shown in Fig. 4. The rear manway contains the safety valves.

Prime Movers. Two vapor compressors, see Fig. 5, each driven by a 30-hp explosion-proof motor, capable of approximately 90 cu ft per min and a maximum of 250 psig, are the prime movers for unloading to storage. Natural gas at 400 psig is available through a meter-regulating station for pressurizing in the event of complete failure of the vapor compressors.

Fig. 3. Storage tanks are protected by a fire-retardant material capable of withstanding 1600 F for three hours without increase in tank contents at 80 percent capacity.

FIG. 4. Operating manway on propane storage tank.

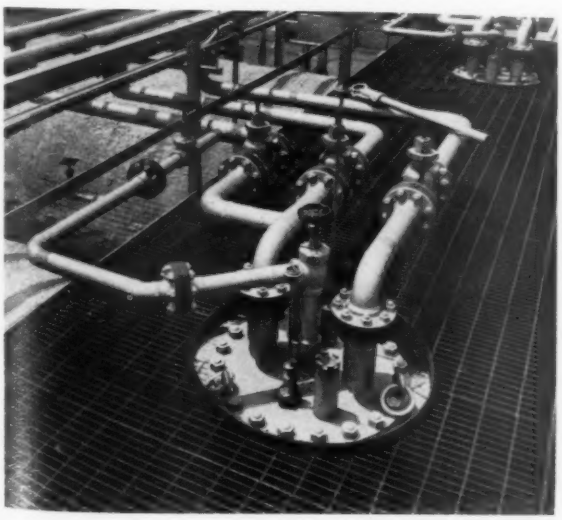
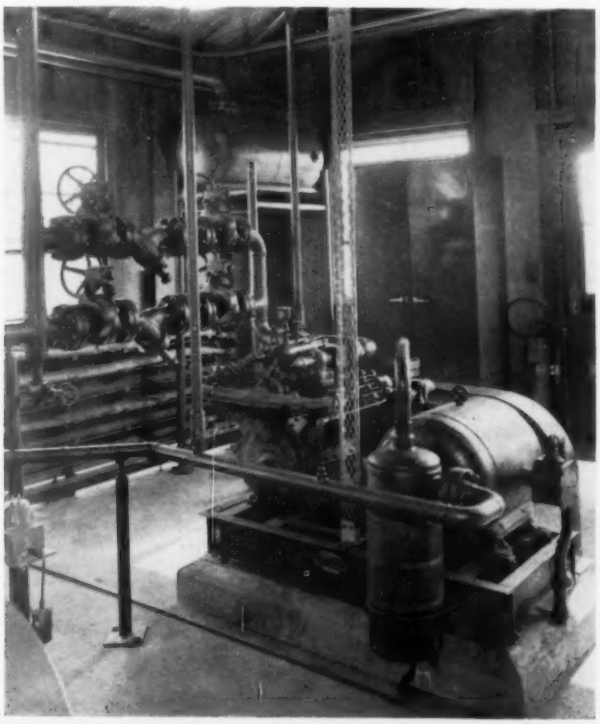
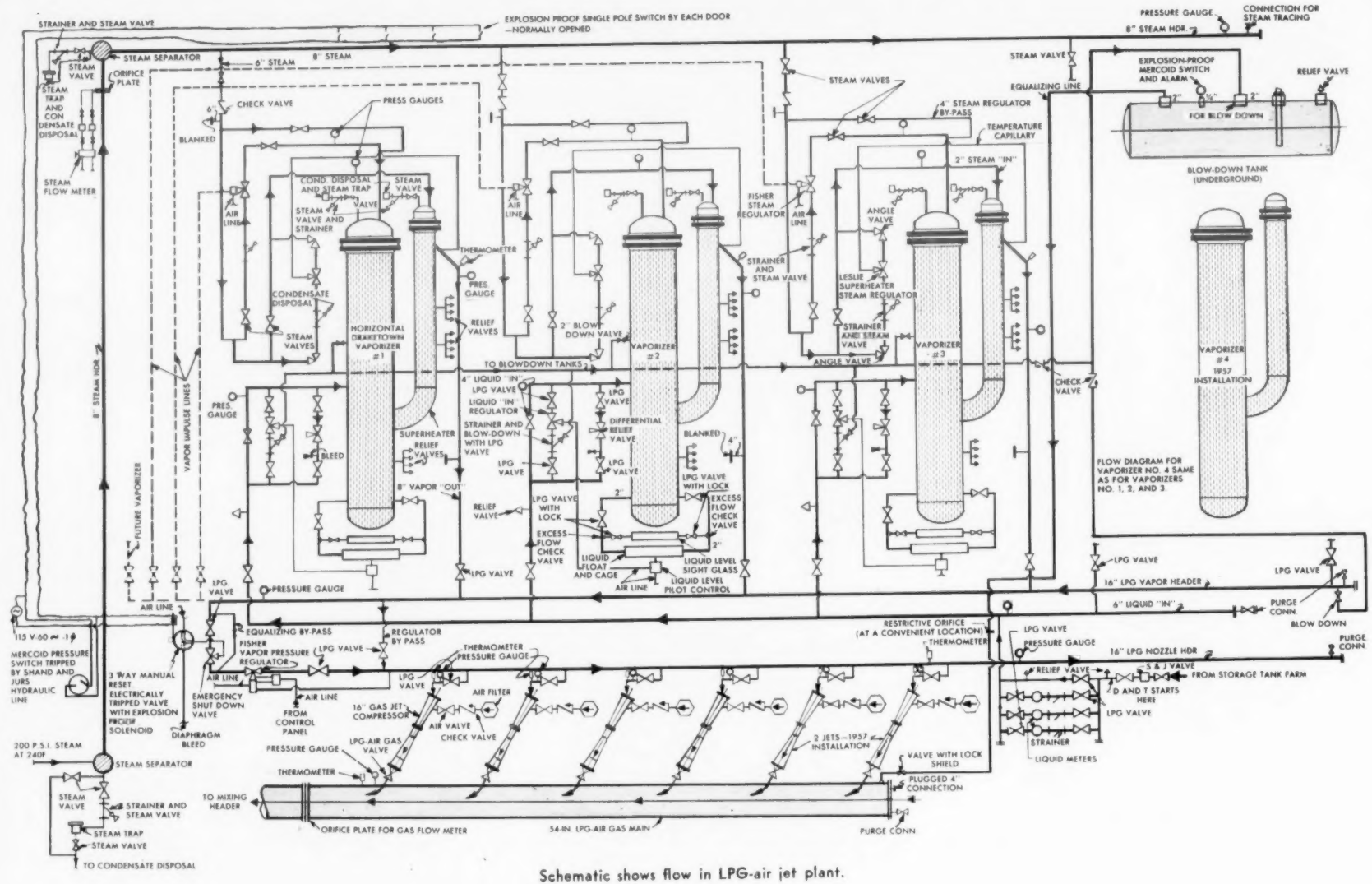


FIG. 5. LPG vapor compressor serves as prime mover for unloading to storage.





Schematic shows flow in LPG-air jet plant.

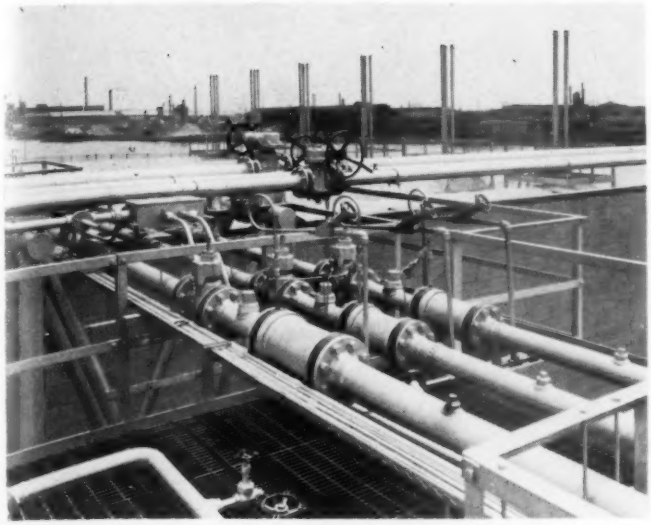


FIG. 6. Hydraulically operated valves are used on all vapor and liquid lines.

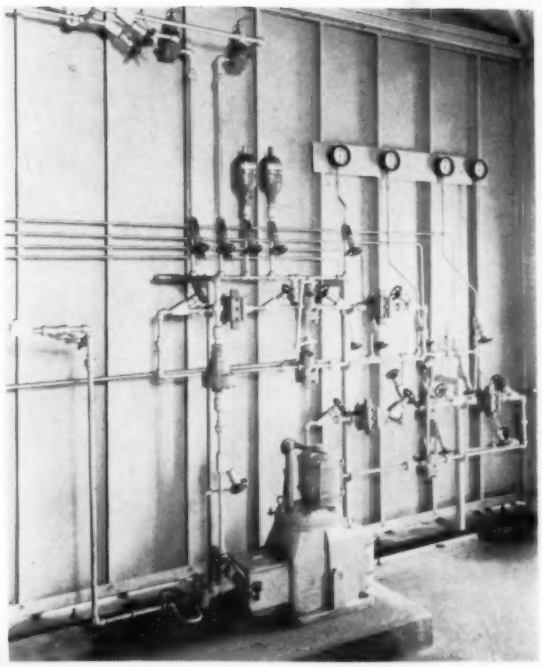


FIG. 7. Hydraulic oil pump and system controls.

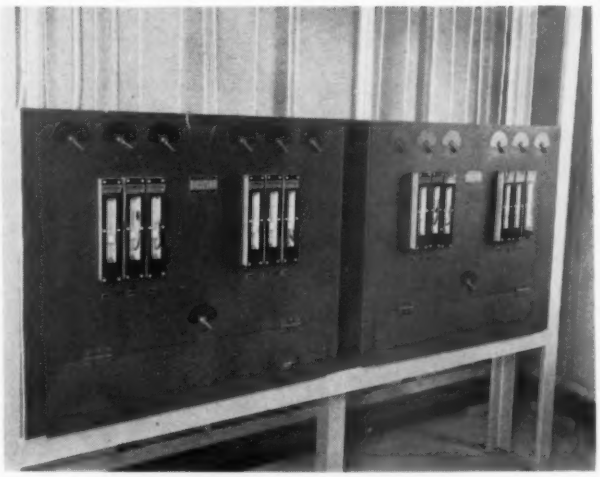


FIG. 8. Air sampling meter panels.

FIG. 9. Electrical analyzing cabinets.

Valves. All vapor and liquid transmission mains are equipped with hydraulically operated valves of the in-line type as shown in Fig. 6. The tank liquid outlet connections are equipped with internally mounted hydraulically operated valves.

A centrally located pump (Fig. 7) supplies the hydraulic oil to all such valves and mercoid switches through approximately two miles of high-pressure system line. Operation of the plant is not possible unless this system is up to pressure. The auxiliary power of the hydraulic system consists of four hand operated pump actuators. Manual, remote, or automatic shut-down of the hydraulic system constitutes complete shut-down of the plant.

Monitoring. The plant area is monitored by an automatic, continuous, air-sampling system consisting of 19 analyzers. One is shown in Fig. 10. This system actuates visible and audible alarms, in the local area and a half-mile away at the major gas plant, if any one of the analyzing heads registers an atmospheric concentration of 20 percent or more of the lower explosive limit of propane-air mixture. If the concentration reaches or exceeds 70 percent, then the hydraulic system is automatically reduced to zero pressure and the plant is shut-down. Two of the air-sampling meter panels are shown in Fig. 8. The electrical analyzing cabinets are shown in Fig. 9.

Pumps. Four liquid pumps (two of which are shown in Fig. 10) each of a seven-stage, vertical-shaft, 60-hp explosion-proof motor-driven unit, rated at 300 gal per min and 200 psig pressure rise, are available as the prime movers of the liquid petroleum. There are two stations, each with two pumps, and each station serves two tank batteries.

The liquid LPG is pumped through approximately one mile of 8-in. main to the jet-air gas plant.

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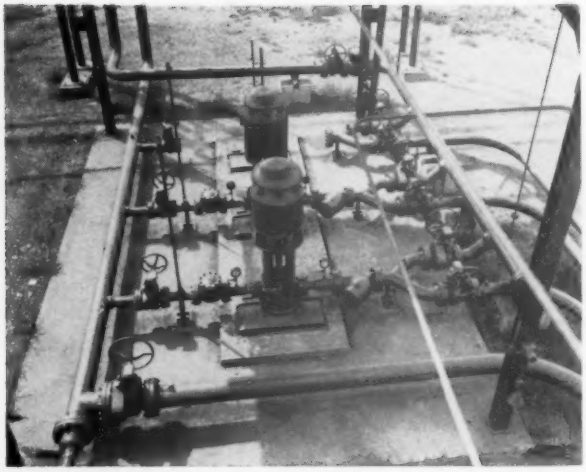


FIG. 10. Liquid pump station.

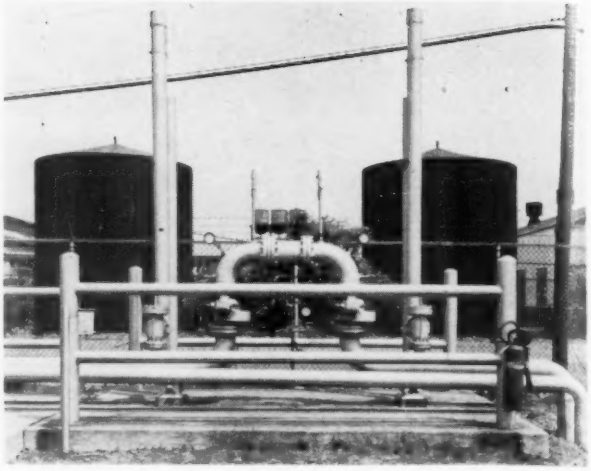


FIG. 11. Sectionalizing valve on 8-in. LPG main.

The 8-in. main is segregated into six sections by hydraulically operated valves of the in-line type, balanced to close against pressure from either direction. Each of these valves is located between two manually operated gate valves, as shown in Fig. 11. All of the sections are adequately protected with relief valves set at 410 psig.

In the event of pump failure, the vapor compressors or the natural gas can be used to pressurize the storage tanks, and move the liquid through the transmission main.

Two liquid pumps, each a five-stage, vertical-shaft, 60-hp explosion-proof motor-driven unit, rated at 250 gal per min and approximately 150-psig pressure rise, are available as the prime movers for material stored in the sphere. A separate 6-in. main, in four segregated sections, conveys the product approximately two-thirds of a mile to the gas plant.

The pumps, shown in Fig. 10, are double manifolded on the inlet side and can also be used to pump from the sphere.

Jet-Air-Gas Plant

The LPG-air gas plant consists of four jet compressors with 20-in. air inlets and 16-in. air-gas outlets and arranged as shown in Fig. 12. Original plant capacity is approximately 2,000,000 cu ft of liquid-petroleum-air gas per hour at 650 Btu and 50 in. wc. Two jets now being added will increase this capacity to 3,000,000 cu ft per hour.

Design of the jet compressors necessitates supplying butane vapor at 140 psig and 240 F or propane vapor at 100 psig and 135 F. Three 16,000-gal per hour horizontal Draketown vaporizers automatically control and supply the vapor. Provision for a fourth vaporizer is included in the design.

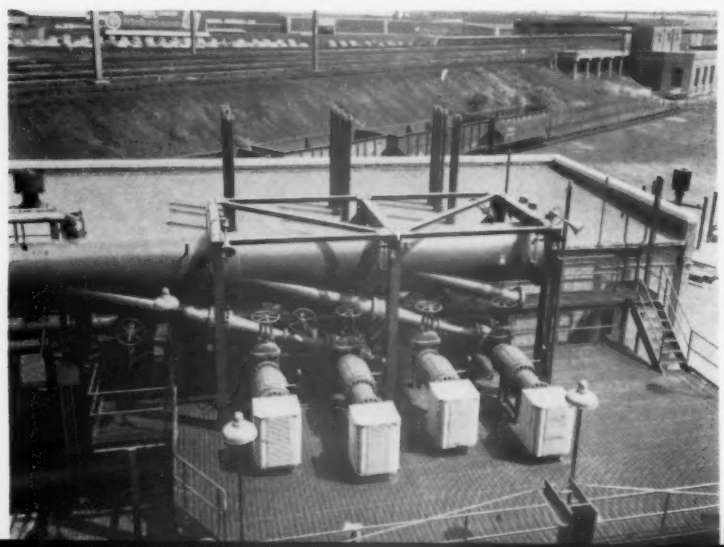
The 8-in. LPG main terminates at this plant. Segregating station No. 6 and the process liquid meters are shown in Fig. 13 and 14.

Vaporizer outlet pressure and temperature are automatically controlled by liquid regulators as shown in Fig. 15 and steam regulators as shown in Fig. 16. Steam is supplied at 220 psig and 500 deg F. The steam header is shown in Fig. 17.

Instrumentation. All phases of the operation are well instrumented. The control room, containing the panel board, thermeter, intercom cabinets, and other equipment is in a separate room from the vaporizer room. These rooms are separated by a gas-tight wall. Some of the important functions assembled on the control panel, Fig. 18, are as follows:

Finished Gas Flow
Steam Flow
Finished Gas Pressure and Temperature

FIG. 12. LPG-air jet compressor arrangement. Two additional jets are being installed to right of these four.



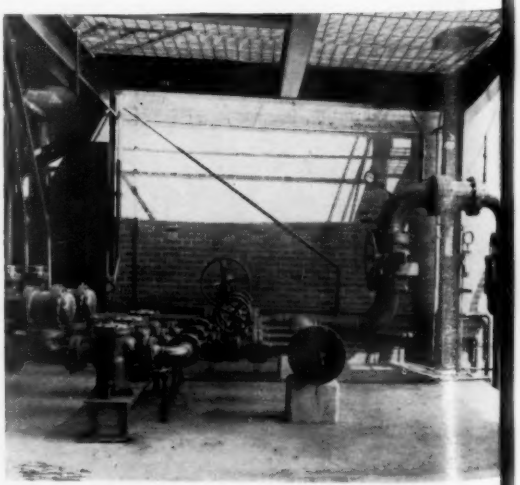


FIG. 13. Segregating station No. 6.

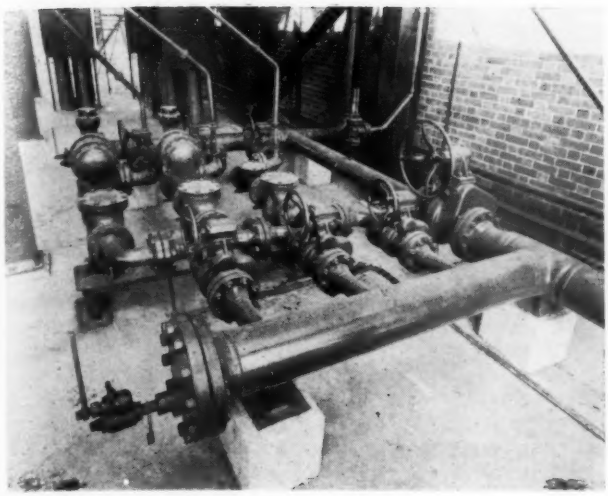


FIG. 14. Process liquid meters.

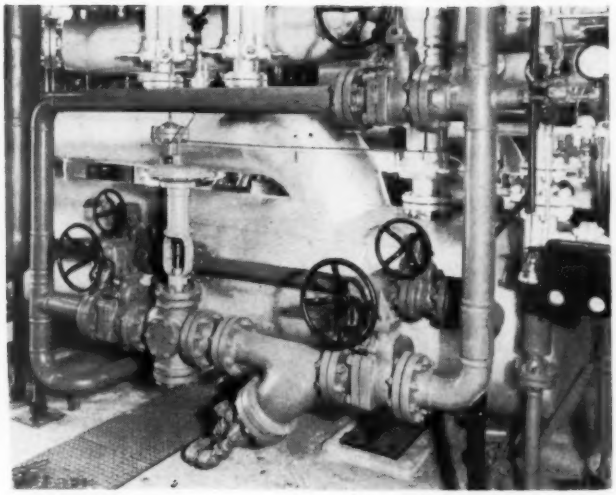


FIG. 15. Liquid regulators on vaporizer setup.

Each Vaporizer Temperature
Vapor Header Temperature
Btu Recorder — Indicator
Specific Gravity Indicator — Recorder is remote
Various indicating pressures and alarms

The end of the 54-in. meter run and the hydraulically operated butterfly valve, which maintains 50 in. wc pressure in the LPG-air finished gas main, are shown in Fig. 19. This controlled back pressure maintains a constant Btu and rate of production per jet for any fixed nozzle pressure. The 16-in. header, which supplies the vapor to the jet nozzles, has its nozzle pressure controlled by a 10-in. regulator.

Failure of the hydraulic system will automatically shut-down the plant by closing the liquid inlet to the vaporizers and the vaporizer outlet header.

Two automatic CO_2 systems, one for the vaporizer room, and one for the control room, are individually actuated for safety.

The two areas, storage and air-gas plant, are united by a two-way intercom system. This enables the operators to coordinate starting and stopping, increasing or decreasing pressures or rates, as well as to enable them to expeditiously handle emergency conditions. Any combination of loading, unloading, and operating can be conducted simultaneously.

Safety Features

Design of both the storage and the LPG-air gas jet plants incorporates many safety features.

As previously mentioned, the hydraulic system is the main control for any operation of the plant. It must first be started to pressurize and open the 43 hydraulically operated valves, and nine mercoid switches at the storage plant.

Mercoid Switches. Four of the mercoid switches are part of the electrical circuit to the liquid pumps at the pump stations. The liquid pumps cannot be started, and will shut-down automatically, when the hydraulic system pressure is below the mercoid settings. The remaining five mercoids are part of the hydraulic system and actuate high and low-pressure alarms and automatic shut-down of the system at high or low hydraulic pressure.

Hydraulic System. The hydraulic system line extends along the same route as the 8-in. liquid transmission line to the liquid-petroleum-air gas jet plant. At each of the six segregating valve stations, the hydraulic line is provided with fusible plugs and manual bleed valves. These are shown in Fig. 13. Other fusible plugs and manual bleed valves are located throughout the areas.

The hydraulic line extends inside the

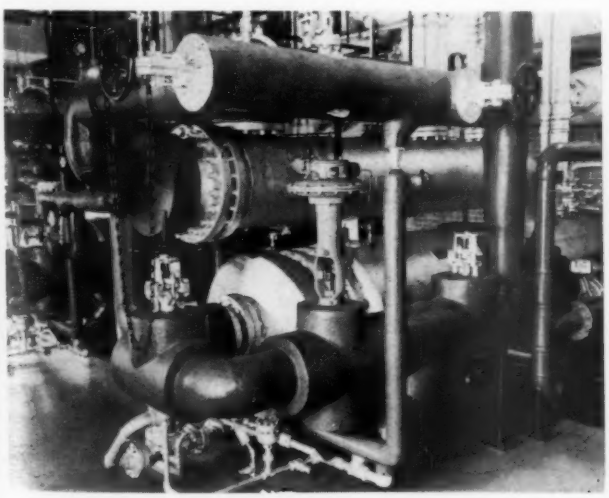


FIG. 16. Steam regulators on vaporizer setup.

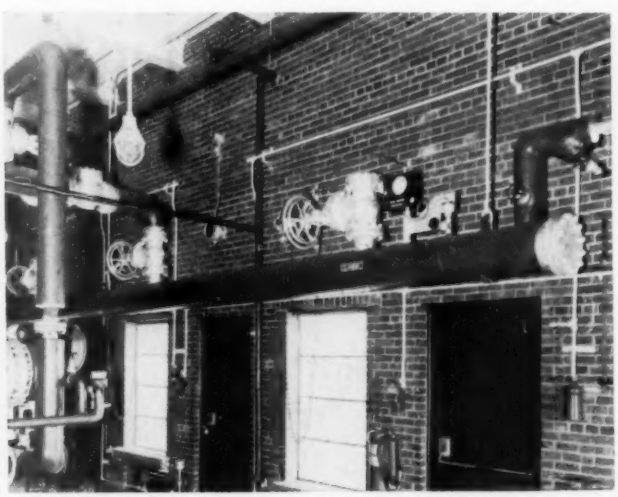


FIG. 17. Steam header. Steam is supplied at 220 psig and 500 F.

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liquid-petroleum-air gas jet building actuating high and low-pressure alarms, mercoids, and pressure gages. One mercoid energizes a three-way, manually reset, solenoid valve that permits air loading of a diaphragm-operated Fisher check valve in the 16-in. vapor header.

Hydraulic pressure below the setting of this mercoid automatically closes this valve by venting the diaphragm through the three-way solenoid valve. This prevents vapor from leaving the vaporizer header, thus shutting down the jet compressors. The electrical circuit of the solenoid valve is extended to a switch at each exit of the vaporizer room, and in emergencies, the plant can be shut-down manually at the doors.

Other Safety Features. In the interest of safety, propane or butane in the liquid or vapor state was considered to be too dangerous to be permitted to enter the control room for the purpose of actuating instrumentation. It was therefore necessary to include in the design many pneumatic instruments for the transmission of pressures, flows, and controlling messages. To protect against condensation and possible freeze-ups of the air system, the air is dried to a dew point of minus 40 deg F, by an automatic change-over and reactivating type air dryer.

The continuous air-sampling system actuates visible and audible alarms not only at the local storage plant area, but also remotely at the cyclic catalytic reforming plant, liquid-petroleum-air gas plant, and main control room of the Harrison gas plant. In addition, the system is adjusted to actuate solenoid valves and vent the hydraulic system to zero pressure, thus closing all tank outlets and stopping flow in all liquid-petroleum yard mains. This shut-down takes place when any one of the 19 analyzing heads registers an atmospheric concentration of 70 percent or more of the lower explosive limit of propane-air mixture.

The 24 propane tanks are protected by a fire-retardant material capable of withstanding 1600 deg F for a period of three hours without an increase in the contents of the tank at 80 percent capacity to over 200 deg F with an initial temperature of 60 deg F.

The Hortonsphere is provided with a manually operated water spray system designed for cooling the contents of the sphere on hot days or if an emergency condition should arise.

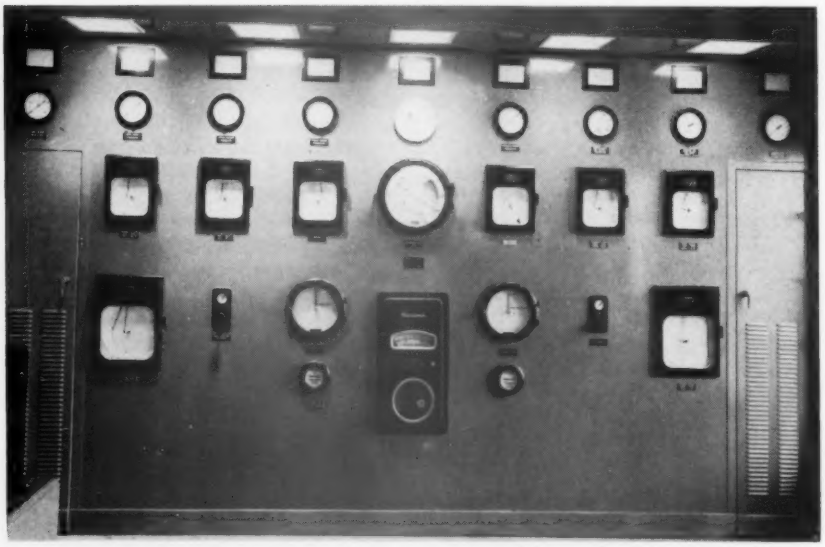


FIG. 18. LPG-air plant control panel is located in separate room from vaporizer room.

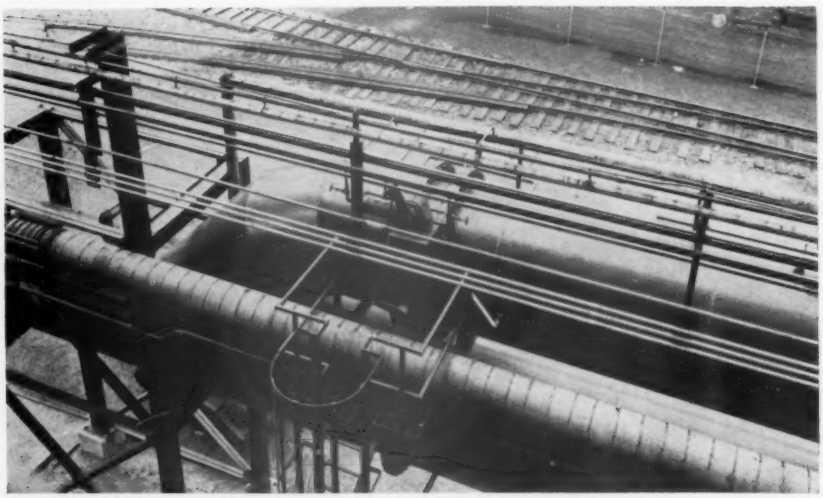


FIG. 19. End of 54-in. meter run and hydraulically operated butterfly valve, which maintains 50-in. wc pressure in LPG-air finished gas main.

The Builders

Engineers, contractors, and major equipment for the installation at the Harrison gas plant follows:

Engineers and Contractors

Chief Engineer:
William J. Lutz

Design Engineers:
William Mergner and Henri V. Precheur

Consulting Engineering Firms:
Roy M. Henwood Associates, Drake and Townsend, Inc., and Moran, Proctor, Mueser and Rutledge

General Contractor:
Public Service Electric and Gas Company

Piping Contractors:
Rowland Tompkins and Son, and Drake and Townsend, Inc.

Electrical Contractor:
Beach Electric Company, Inc.

Major Equipment

Propane Tanks:
American Car and Foundry Company

Hortonsphere:
Chicago Bridge and Iron Company

Liquid Pumps:
Ingersoll-Rand Company

Hydraulic Pump:
Milton Roy Company

Vapor Compressors:
Brunner Manufacturing Company

Valves:
Grove Regulator Company, Lunkenheimer, Nordstrom, Okadee Company, and Shand and Jurs Company

Safety Valves:
Garrett Oil Tools, Inc., Metal Goods Manufacturing Company, and Rego-Bastian Blessing Company

Vaporizers:
Drake and Townsend (Draketown)

Controls:
Fisher Governor Company

LP Jets:
Schutte and Koerting Company

Gages, Instruments and Miscellaneous:
Askania Regulator Company, Bristol Company, C. M. Kemp Manufacturing Company, Davis Equipment Company, H. R. Kirkland Company, Manning, Maxwell and Moore Company, Mercoid Company, Metal Goods Manufacturing Company, Republic Flow Meters Company, Rochester Manufacturing Co., Inc., Rockwell Manufacturing Company, and Walter Kilde Company ★ ★ ★

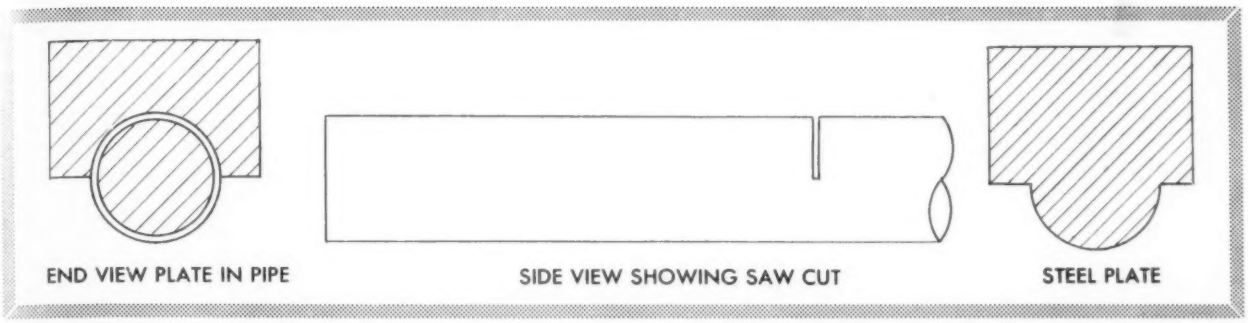


Plate cut method is illustrated above. Stainless steel plate is cut to fit pipe. Cut is made with railroad hacksaw.

'Plate Cut' Method Simplifies Problem of Extending Dead End Lines

Alvin C. Singer, *Superintendent*
Construction and Maintenance Department
Kansas City Missouri Division
The Gas Service Company
Kansas City, Missouri

OFTEN in the operation of a metropolitan area gas distribution system it becomes necessary to do construction or maintenance work on an intermediate pressure system where it is not possible to completely shut-off the mains involved.

In some cases, the system will not have sufficient valves, or valves are not located in the proper position for a particular job. In some cases commercial customers would be deprived of gas supply and their employees suffer temporary loss of employment due to gas supply interruption.

This is poor public relations. Major shut-off and turn-on operations are expensive. Service interruptions are to be avoided by the gas utility if at all possible.

Several factors tend to accentuate this problem. Construction of new "super-highways" and thoroughfares, with resulting grade changes, make necessary the relocation of sections of intermediate pressure feeder mains. Some intermediate pressure mains in older areas of cities need repair or replacement.

As city gas systems expand with a growing city, suburban gas systems are acquired and made part of the metropolitan system. Assimilation of these surrounding areas creates problems of handling pressures as gas lines are tied in and extended.

Most companies have developed procedures that work very effectively where large mains in the intermediate pressure system are involved. This article is concerned chiefly with a procedure to be used on smaller mains — 6-in. and under. The method described was developed by personnel of The Gas Service Company and has been of considerable value to them.

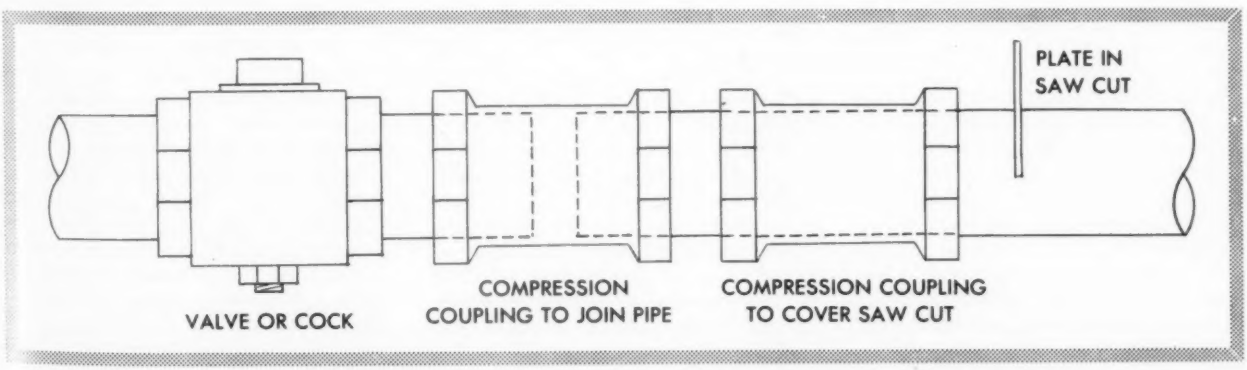
This "plate cut" method is not a replacement for some of the patented tapping equipment designed for such work. This method is not as safe nor is it as capable of handling the higher pressures as such patented equipment. It is, however, adequate for handling intermediate pressures where such patented equipment is not available and is quite inexpensive.

The Problem

In the smaller main classifications, a serious problem exists in handling construction and maintenance functions without proper valves for control of gas. This problem exists because several of the small distribution systems acquired by the company were primarily intermediate pressure in nature.

When these systems are connected to the larger distribution system, the flow pattern is changed and thus, many valves are not strategically located. When these systems were installed, quite often sufficient valves were not placed in the line — due to wartime restrictions, etc. In some cases, dead ends were welded shut.

When it becomes necessary to ex-



Layout of job shows plate cut with plate inserted for shut-off; compression coupling that will cover saw cut after plate is removed; compression coupling to join pipe where extension made or line has been cut off, and valve or cock in place.

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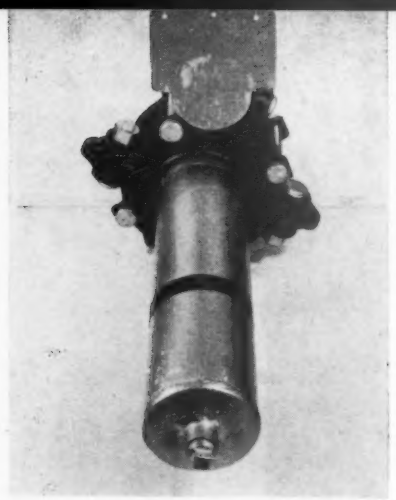
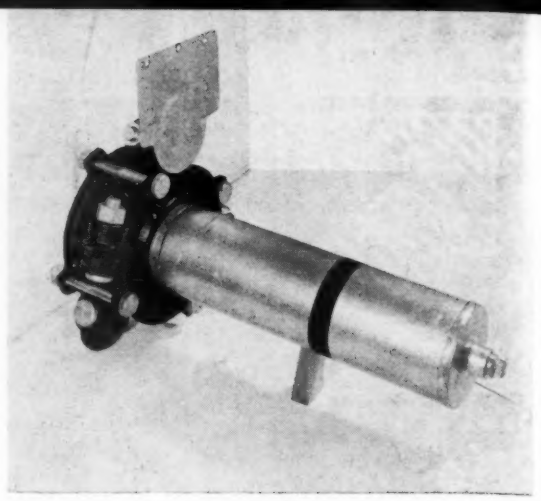


How plate cut method looks when used to extend a dead end line is shown in these two views. Plate is suspended above the plate cut. Dead end of main is to be cut off at the black line. Weld clamp will be permanently positioned over the plate cut after valve is secured in position and plate removed.



tend such a main, there arises the problem of an expensive shut-off for many customers — or cutting off the end of a live main and stabbing on a valve and compression coupling against pressure with considerable loss of gas.

These intermediate pressure systems usually carry 25 to 30 psi in the winter and about 10 psi in the summer. There is also the problem of cutting-in tees and branch connections.

Possible Solution

One of the service foreman, Ernest Baker, had occasion to use plates (disc shaped) inside a Skinner split coupling clamp to isolate sections of the distribution system. He reasoned that a similar method could be used to control flow of gas in the line for construction and maintenance purposes.

He made the original design and made the first use of this method, which is now referred to as the "plate cut" method. Since that time, other foremen and supervisors have modified and expanded the method, and today it works in a very satisfactory manner.

How it Works

A saw cut is made in the live main, starting at the top, and cutting down through the upper half of the main. For this cut, a heavy railroad hacksaw is used. This saw cuts a slot .051-in. wide. A piece of stainless steel previously cut to shape is inserted into the slot. This stainless steel is shaped so that it fits the interal contour of the live main, stopping the flow of gas except for the gas that leaks around the joint between the plate and the main. This plate is wired in place so it cannot be accidentally knocked out of position.

With the flow of gas controlled in the main, a cut can now be made into the line and a valve or tee installed as required. If gas feed to this point is from both directions, it is also necessary to make a cut and install a plate on either side of the work site. Installations have been made using plates on either side of a work area and still maintained enough pressure by using a by-pass line to supply customers on one side of the area.

Installation of the valve or tee required is usually made using compression fittings. In some cases, a compression coupling is placed upstream of the cut-off point and is used to cover the plate cut after the valve or tee is secured in place. At other times the plate cut is covered by a clamp, such as a Skinner weld clamp. After the valve or tee has been installed, the plate is removed and the compression coupling or weld clamp is secured over the plate cut and service is then restored to normal.

Pressure Limitations

The pressure that can be handled by this plate cut method is dependent upon the resistance of the stainless steel plate that extends down into the bottom half of the main. The larger the main, the longer this segment of plate. As the segment gets longer, the bending stresses are greater due to pressure. On larger mains, the joint between the plate and the internal face of the live main is also longer. This means that, at a given pressure, more gas will be lost when this operation is used on a larger main.

The plate cut method has been used at the following pressures:

2-in. pipe	up to 35 psi
3-in. pipe	up to 18 psi
4-in. pipe	up to 12 psi
6-in. pipe	up to 8 psi

The plates will not bend at pressures greater than those listed above, but the greater the pressure, the greater the leakage. Cuts in pressure, however, have been made to the points listed. If necessary to handle higher pressures, by this method, it can be done using an experienced crew.

An alternate system has been used to handle higher pressures. In this alternate method, the upstream plate cut is fitted with a plate in which an orifice has been drilled. A corporation cock is then placed in the main between the upstream plate cut and the downstream plate cut. With a pressure gage on the main between the plate cuts, pressure can be controlled by bleeding off gas at the corporation cock.

Gas flowing into this section is limited by the restricted opening in the upstream plate. Pressure then can be controlled at a level where the downstream plate will hold the pressure in a satisfactory manner.

Material used for these plates is 18 gage, type 302, 2B stainless steel. This plate is annealed, yet is stiff enough to resist bending at the pressures encountered.

In some cases, the plates have been installed at an angle so that the force of the gas on the plate will assist in sealing the point between plate and the inside of the main. This can be advantageous at higher pressures. Tests made on two systems, at 30 psi, have not shown much difference in the amount of gas lost, and the method of making cuts perpendicular to the long axis of the main is standard practice.

Using This Method

The plate cut method requires planning and experienced workmen. It has been very valuable and saved our company from jumping on connections against intermediate pressure.

The system has been used on maintenance operations to stop blowing gas because the men were trained and carried plates on their trucks for the various size lines.

This system is much safer than the alternate solutions that were used before this system was developed. As pointed out previously, it is not a replacement for patented equipment designed to do the job. This system, however, has been used since 1951, has saved our company a great deal of work and expense, and there have been no accidents from its use. ★ ★ ★

Punch section of tabulating department punches billing detail cards from meter books, and also brings address cards up to date, based on changes noted by meter readers.

At New Jersey Natural Gas Company . . .

Punched-Card System, Computer Speed Billing, Accounting Procedures

W. Alfred Pearce
Supervisor of Tabulating
New Jersey Natural Gas Company
Long Branch, New Jersey

THE AGE of electronics comes to office management in many and varied ways. In the case of New Jersey National Gas Company it came in through a pipeline.

Merger of two New Jersey utility companies in 1952 to serve a large area of this state with natural gas, brought with it a major problem in billing and other accounting functions. Of these two companies, the Jersey Central Power and Light Company had a punched-card billing procedure; the County Gas Company billed on key-driven accounting machines. Among the multitude of problems which attended the conversion to natural gas, the problem of a uniform and efficient billing system was of course an important one.

Management of the merged organization actually drew executives and experience from many different utilities. This experience involved a great many different systems and procedures, and from it was derived one that would best serve the needs of the new company. The result was conversion of the entire billing operation to a Remington-Rand punched-card system — later brought fully into line with the best modern practices by the addition of a Univac 60 Punched-Card Electronic Computer.

The task assigned to this system was twofold: First, to provide the fastest, most accurate computation of a present peak load of 130,000 bills per month, with capacity for expansion to no less than 200,000; and, second, to open up to management an entirely new area of statistical compilation, making available quickly and easily vast stores of information which had previously been available only through long and laborious manual calculation, if at all.

During the first three months the systems previously in force in the two individual companies were continued, preparing for the switch to the new punched-card program. Today, both billing detail and bill addressing are done on the punched-card equipment. While, in the beginning, cost saving was far less apparent than improved efficiency and speed — plus the new availability of statistical data — it is anticipated that the actual billing cost will be considerably reduced under this procedure. A substantial reduction has already been experienced.

New Jersey Natural has a winter minimum load of 90,000 bills per month, which goes up to a peak of 130,000 in the summer season; its service area covers 15 municipalities in Morris County, part of Middlesex County and all of Monmouth, Ocean, and Cape May counties, including most of the Jersey coast resort areas. Each customer is billed monthly, in 20 daily cycles, and meter reading is broken down in the same way.

There are 33 meter readers, with a route book per day per reader — for a total of 660 books — each of which contains an average of 180 accounts — more or less, depending upon the season. The meter books are the posting media for the punched-card system. The procedure begins when each book is logged into the tabulating department by a clerk, who sets up a control card for a work flow through the department.

From this point there is a straight-line flow, in a physical sense, clockwise around the tabulating department. First step is the punch section, where one operator punches new name and address data where required, on the basis of change information noted by the bookkeeper.

Then the meter book goes to a second punch operator, who brings each customer's billing detail up to date. This card, reproduced from the previous month, has the last reading figure on it, converted from the "present" reading column to "previous" column. To this card the operator adds the present meter reading, present date, control code, identifies the type of billing (there are 10 possible variations), and consumption for the period.

Next, the cards go to the Univac 60. The detail cards are put through the computer to test the accuracy of the meter reading and punching, and to convert the reading, in terms of 100 cu ft, to therms (1.05 therms per 100 cu ft). The number of therms is automatically punched into the detail card by the computer.

If the meter reader substracted wrong, or the data was punched improperly, the computer will not process the card. Thus there is io need for further verification, since the system works from sound facts and verifies them electronically — five times as fast as could be done manually.

From the date shown on the card the computer also determines the period of use in tenths of a month. The normal term is from 24 to 35 days, and if the consumption period is outside that range, the unit automatically punches the period into the card.

The detail card carried over from the previous month's billing contains the

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Univac 60 punched-card electronic computer, heart of the punched-card system, computes billing amounts from card data and automatically punches the card.

In a single pass of cards through the computer, all rates — 10 variations are possible — are calculated. Presorting is not required, since the computer picks up program coding for proper rate from each card — at a speed of 120 cards per minute.

proper rate codes for computation of the final billing amount. Therefore, once the cards have been verified, and any necessary corrections made, we can immediately run the entire deck through the Univac computer and automatically extend the rate to dollars and cents according to a total of 10 different rate codings.

Complete extension is done in a single pass for all rates, without the necessity of segregating cards by rates. This involves a basic 26-step programming of the computer, although the maximum number of calculations may run to 30 steps in some cases. Each deck so handled represents approximately 10 meter books which were grouped before being sent to the computer, thereby making a much easier and faster operation than running the books singly.

Billing detail cards and name-and-address cards are then matched and sequence checked on the collator. The cards are then ready for billing on the tabulator. A continuous postcard stock bill is used.

Bills are passed through two tabulators —one to print the detail side of the bill, and the other to address each card. Each card unit is perforated into three sections, one of which becomes a standard postcard-size bill for mailing to the customer; one for accounts receivable ledger record, and the other for district office memo use.

The bills then go to a burster-imprinter which separates them and imprints postal indicia on the postcard section, making it ready for mailing to the customer without further handling.

Detail cards are then sorted according to rate codes at 800 cards per minute on the electronic sorter, and summaries of each group are prepared for statistical purposes.

Finally, the billing detail cards are put through a reproducer, which sets up the advance information for next month's billing — moving data fields so that the "present reading" becomes "previous reading," and the latest reading date moves into the "date from" column. The rate code, which is permanent, is maintained, and the consuming address and other basic information also carried over. The address cards themselves require no reproduction except, after many months of use, when they may need to be replaced because of wear or in the case of a changed customer name.

This billing is, of course, by far the most important work on the Univac system, but it is by no means the whole story. Much special work is done as required. For example, a temperature analysis over a 25-year period is now being run, showing the degree-day averages and other statistical calculations, which will make possible projection of gas requirements over the next several years for various geographic locations in the territory. Other analyses of rates, consumption, and meter records, as well as payroll can be handled efficiently and accurately on the same equipment.

While the punched-card program itself offers a substantial advance over previous methods, the computer has provided a far greater flexibility. Before its installation, bill extensions were handled at the rate of 30 to 32 per minute. The Univac computer extends bills at the rate of 120 per minute.

While the system's efficiency and speed are vital to operations, the element of accuracy is of equal or greater importance. By proper programming to provide verifications and checks, much manual work is eliminated and at the same time we know every bill sent out is prepared with electronic accuracy.

Acknowledgment

This article was developed from a talk presented at the AGA Distribution Conference, Houston, Texas, May 1957.

★ ★ ★

Bill-writing is done on tabulators, using continuous postcard stock. Bills are also addressed in separate procedure on tabulator. Collator is at right.

Electronic sorter segregates cards for any statistical analysis or summary, at speed of 800 per minute.

1 Contractor's foreman receives call by two-way radio.

2 Cut left by street foreman is not squared off or cut back. Contractor does this. Note safe, neat manner in which cut is left.

In making pavement replacements, Rochester Gas & Electric finds

'Permanent Patching' Is Faster and Better

Frank J. Sisca
General Street Foreman
Rochester Gas & Electric Corporation
Rochester, New York

ONE OF THE most vulnerable aspects of all maintenance work in a gas distribution system is the replacement of pavement cuts. While this might appear to be of a secondary nature in service to the customer, it is of primary importance in the perpetuation of good public relations. Driveway replacements manifest this situation to greater proportions.

Rochester Gas & Electric Company, located in the upper area of New York state, is subjected to winter temperatures often for periods up to six months. In previous "cold" seasons, a cold bituminous mix was used for repair work. This substance, however, does not have the durability of a hot asphaltic mixture.

In the past, when a street opening was made, the cut was always left in a temporary condition. Sometimes the base was replaced, and other times it was not. Replacing the base depended on the work that the foreman had left to complete that day.

In all cases, he topped the cut off with a coat of cold bituminous mix, as a temporary measure until permanent repairs could be made. This period between "temporary" and "permanent" repairs might range from six months to a year. During this period, temporary repairs often had to be repeated due to heavy traffic or the freezing and thawing action of the elements. Furthermore, the permanent patches were often unsatisfactory, due to the necessity for transporting the hot asphalt long distances. This resulted in a cooling of the material so that it could not be applied at its best temperature con-

3 In many cases, particularly downtown areas, heavy ¾-in. steel armor plates are used to guard holes until contractor arrives.

4 Contractor's truck-mounted rig is used to pick up steel plates.

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5 Portable concrete mixer in action. This mixer is a ½-sack unit, driven by air-cooled gasoline engine. Unit is drawn by a 3-yd dump truck that carries concreting materials. Truck also has 60-cu ft air compressor and air tools for cutting and tamping.

6 Divided body 5-yd dump truck carries asphaltic materials and patching unit that makes hot asphalt on job. Patching unit has 7-cu ft capacity, using #1-A stone, sand, fines, and asphaltic cement. A 10-hp engine drives pugmill and airblower to feed four low-pressure burners.

dition and a perfect patch was practically impossible.

This type of repair was not only expensive but was detrimental to the good public relations program for which all public utility companies endeavor. In an effort to reduce cost and improve our public relations, we felt a change was in order.

New Method Developed

With all this in mind, we sat down with one of our paving contractors and in this meeting, the following ideas were developed:

1. **Where practical, the contractor would start permanent repairs on pavement the same day that the gas work and backfilling were completed.** One way to expedite and coordinate these repairs was to change this pavement repair crews working hours from 7:30 a.m. to 4:00 p.m. to a 10:00 a.m. to 6:00 p.m. shift.

2. **Contractor must heat edges of old pavement with a torch to assure proper bonding.**

3. **Final asphaltic mixed sheet coat must be made on the job,** making it superior to transported mix with no temperature losses upon application.

4. **Coordinate repair work and pavement replacement by using two-way radio contact.** A street foreman, knowing he was going to complete work in a pavement cut that day, could call his dispatcher and give him the time, place, size, and type of cut to be repaired. This information in turn was to be relayed to the contractor's paving foreman by short wave radio.

How It's Done

The contractor replaces the same kind of base to the same depth that was in the original roadway. This base is topped with a 2-in. layer of coarse binder, followed with a 2-in. sheet coating consisting of a hot asphaltic mix of fine stones, cement, and sand, laid on top of binder to match the top surface. A tack coat is used between binder and sheet coat. The edges must be sealed with more asphaltic cement in order to keep out the moisture.

As a rule, contractor's crew has a "follow-up" 5-yd truck to pick up excessive dirt from cuts. It also carries hot binder during the summer months. Binder is not mixed on the job during the warmer months, usually from April 15 to October 15.

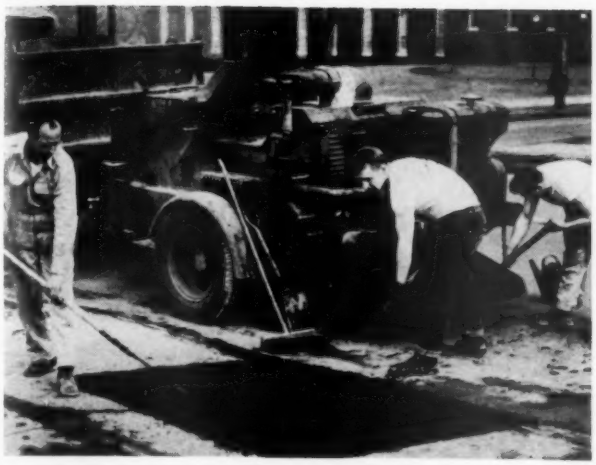
The accompanying illustrations give a "step-by-step" description of a typical job and equipment used.

We believe that we have made considerable progress in our "time-and-step saver" program of pavement replacement. This, of course, results in substantial savings throughout the year. In this type of operation, we are saving the entire cost of the temporary patch. Moreover, we feel that with this process, we comply with the specifications outlined by the city for pavement reconstruction.

Nevertheless, we are constantly striv-

7 Close up view of asphaltic patching unit. Each batch takes 3 to 5 minutes to mix.

8 Workman applies tack coat on binder before installing sheet coat, which insures proper adhesion between binder and sheet coat.



9 Applying sheet coat with man raking. When rolled down, patch is left approximately ½-in. above old street grade.

10 Two-ton tandem roller rolling patch. Water is used to prevent hot asphalt from sticking to rollers.

11 Hot asphaltic cement is poured on edge of cut.

12 Edge is then brushed to assure proper sealing.

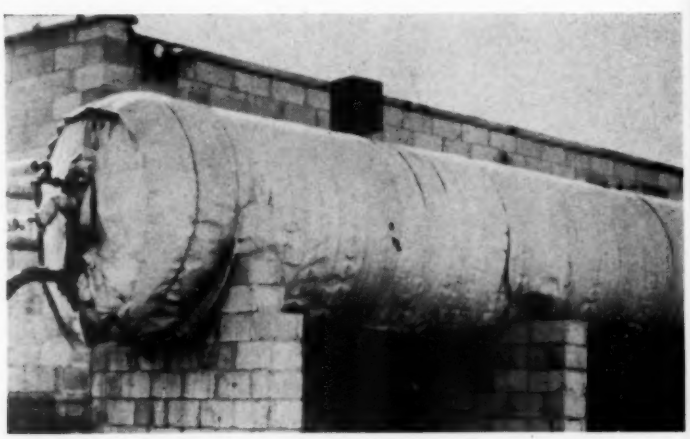
ing to improve paving operations and currently have several improvements over our present methods. Foremost among these ideas is the consolidation of equipment, whereby much of the equipment shown in the accompanying illustrations will be assembled into one integral unit. When in use this next piece of equipment will cut down manpower from seven to three men, and reduce the number of trucks from three to one, thereby assuring a considerable savings. This newly designed unit is now being fabricated.

Our goal is the elimination of temporary pavement patchings with a complete "same day" permanent pavement replacement operation. We feel that we have advanced toward achieving that goal.

Acknowledgment

This article developed from a talk presented at the AGA Distribution Conference, Houston, Texas, May 1957.

13 Two complete patches. Edge of one cut is shown unsanded. Sanding keeps traffic from picking up hot asphalt until it is set.



14 4000-gal tank used to store asphaltic cement material at fairly constant temperature the year 'round.

FIG. A

Newest Patching Machine at RG & E Is Combination Machine That Does Just About Everything

Editor's Note: Since the original article, on the preceding pages, was written, RG&E's contractor has put into use a new, integrated patching machine. Much of the equipment formerly found in separated form has been assembled into one unit. Consolidated into this one machine are the pug mill, preheater, automatic controlled hopper, fuel oil reservoir, and air compressor, as shown in Fig. A.

Unique feature of the new unit is the patch preheater (Fig. B), which makes it possible to complete asphalt cuts under severe winter weather. In Fig. B also can be noted a divided hopper, which holds both binder and sheet coat materials. The amount of material supplied to the pug mill is controlled mechanically from the side by the operator. This means that no hand shovel work is required to obtain any particular mixture to the pug mill. Fig. C shows the machine in operation, with men topping cuts at rear of machine.

FIG. C

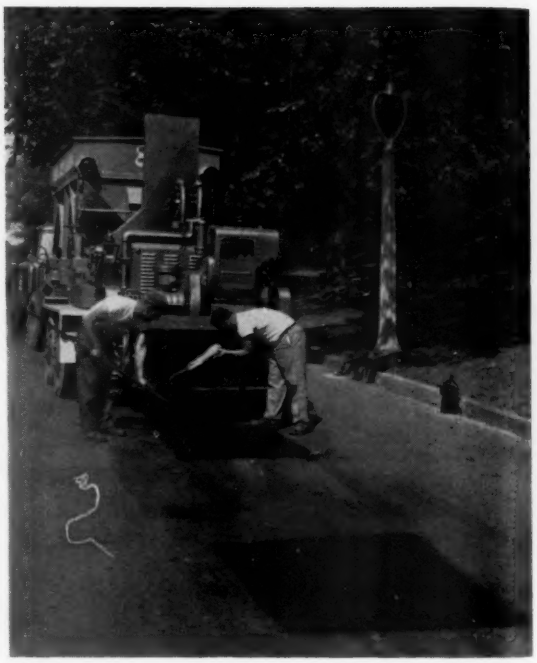
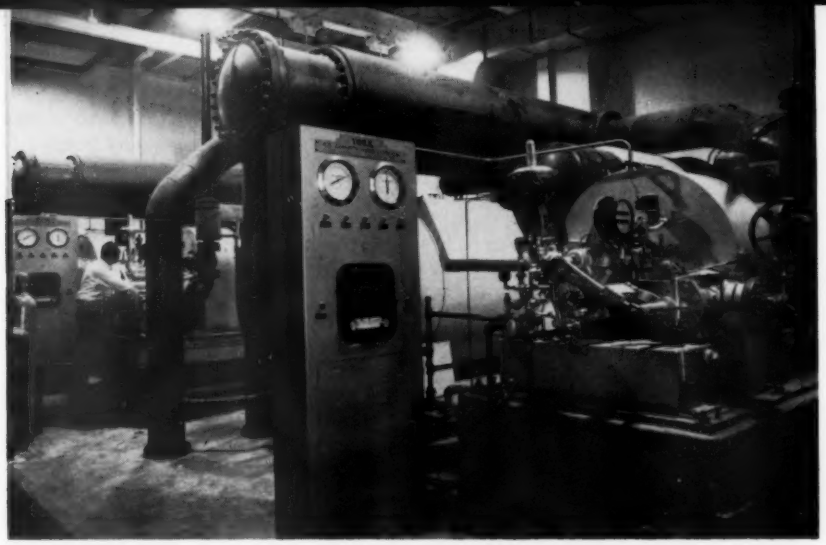


FIG. B

Gas Heats and Cools . . .



Air conditioning equipment consists of two 600-ton York compressors and steam turbines that drive them. In the foreground is the control panel for one of the units and turbine. Directly behind each turbine is a compressor. Architect's sketch below of new Love Field Terminal as it will look to landing plane.

World's Most Air Conditioned Airport

THE world's most air conditioned airport — Dallas' new Love Field Terminal—will be cooled and heated by gas-fired equipment. From front door to loading ramp, natural gas will provide a comfortable, man-made climate throughout the year. From the time a passenger enters the building until he walks from the loading gate the short distance to his plane, he will enjoy the comforts of gas air conditioning.

Complete air conditioning is only one of the many features of the new terminal where operations are expected to begin November 1. The $7,350,000 building has two-way moving sidewalks to cut down walking distances within the terminal, single-level operations to eliminate stairs and escalators, automatic doors at all points used by the public, wide canopies over driveways to permit unloading or loading of automobile passengers with complete protection from the weather, a covered sidewalk serving the parking lot, and a theater-type spectators' lounge.

Gas steam turbine-driven compressors provide 1200 tons of cooling for almost 3½-million cu ft of floor space in the building. In addition to complete facilities for airline passengers, there are three floors of office space and four floors of control tower functions.

The huge building is cooled by two 600-ton steam turbine-driven York centrifugal refrigeration machines. Chilled water is circulated throughout the building to provide the cooling.

Heart of the system is located in the equipment building, near the east loading ramp. Here the refrigeration units are located with two large pumps to circulate the water and the two Babcock and Wilcox boilers. These mammoth boilers will carry their heaviest work load in the summer when they produce 30,000 lb of steam hourly at 235 psi to drive the steam turbines that power the refrigeration machines. Each boiler can develop 360-hp. In winter, these boilers produce hot water to warm the building thoroughly, but this will be a much lighter load than the summer operations require. The boilers will supply all hot water needs for the building throughout the year.

The cooling tower is located directly outside the equipment building. Constructed of redwood, it is 73 ft long,

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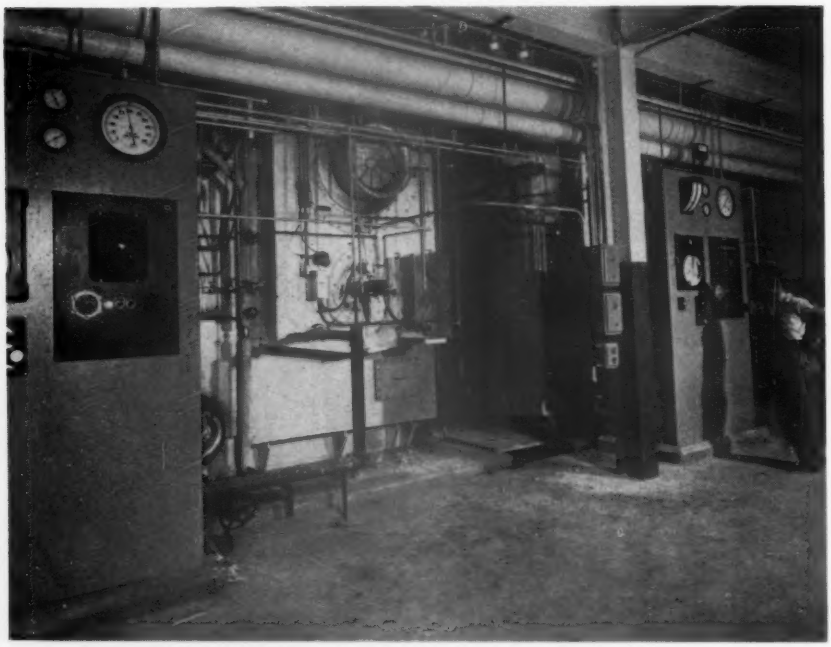
32 ft wide, and 28 ft tall. It can cool 3600 gal of water per minute.

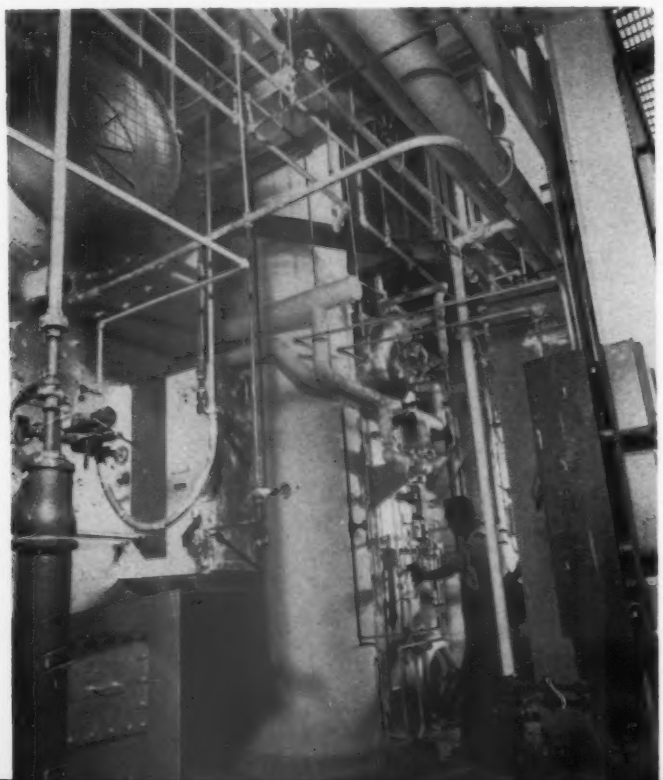
In addition to the two pumps in the cooling tower and two large pumps that circulate the chilled water, there are 16 secondary pumps to keep the water moving throughout the sprawling terminal. More than 70 air-handling units are required by the system, with 12 of these in the 27,000 sq ft lobby alone. These units permit temperatures to be individually selected for all areas of the building.

Before selecting natural gas as the fuel for air conditioning as well as heating the new Love Field Terminal, city officials and engineers made a thorough study of all the systems that would be practical in this area, from the standpoint of efficiency as well as operating cost.



Control panels for the boilers of air conditioning and heating system at the new terminal. All operations of boilers can be regulated from these control panels.

Feed water-heater control mechanism for boilers. At left is one of boilers capable of producing 30,000 lb of steam hourly at 235 psi to drive turbines.



In a report on the gas-fired system, which required two weeks to compile, Lone Star Gas Company of Dallas pointed out that by using gas steam turbine-driven compressors rather than electric motor-driven compressors, the "city will save in operating cost alone in excess of $12,250 annually and approximately $236,000 during the first 20 years." *The report also showed that the slight additional investment represented by the gas-fired equipment would be paid out in less than one year.*

This report was in addition to more than a year of preliminary discussions and conferences between Lone Star officials and city representatives, architects, mechanical engineers, and others.

Summer and winter operations for the new terminal will provide an annual load of approximately 91,000,000 cu ft for Lone Star, with consumption much higher in the summer months. The air conditioning season in Dallas extends through most of the spring and fall months as well as the summer.

In recent years Dallas has become one of the top air-traffic cities in the nation. Although the metropolitan area ranks 21st in population among the nation's metropolitan areas, it is 8th in number of enplaned air passengers, 8th in tons of enplaned air freight and 6th in tons of enplaned air mail. Dallas' Love Field is by far the busiest airport in the Southwest and one of the busiest in the nation.

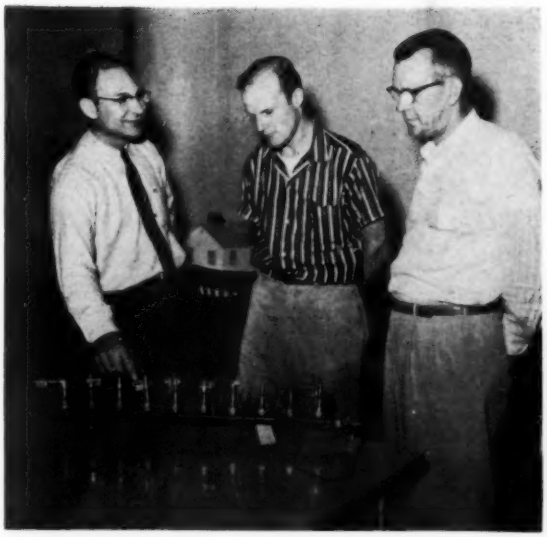
There were more than one-million local — orginating or terminating — passengers at Love Field in the year ended June 30, 1956. Counting the through passengers who visit the terminal while their planes are on the ground and the non-local passengers who change planes here, the number of passengers using the terminal totals several million annually.

Located only 5½ miles from the center of downtown Dallas, the new terminal is more than six times as large as the old building, located just across the field. In addition, the new terminal has a separate air mail and air cargo building.

Gate positions for 26 airplanes are provided in the new location. No other air terminal in Texas has more than 17.

It has been estimated that the terminal will produce more than $850,000 in revenue during its first year of operation and by 1960 will be producing considerably more than $1 million annually. Love Field has long been one of the most successful airports in the nation from a financial standpoint. The use of gas as both a cooling and heating fuel will add to this success. ★ ★ ★

Training supervisor explains various new designs in pilots.



Directly and indirectly, research has helped save Minneapolis Gas Company vast sums through lowered operating costs . . . perhaps it can help your company do the same

How Research Benefits the Gas Utilities

George B. Johnson
Vice President
Minneapolis Gas Company
Minneapolis, Minnesota

PRIMARY purpose of a gas utility is to sell gas to the home and industry. Continued expansion of gas and its utilization is dependent on its demand by the public. Research is one of the many tools of industry used to keep this demand in front. AGA's Domestic and Industrial Research program is an important factor in finding diversified uses for gas and keeping appliances salable for its utilization by designing them for efficient and reliable performance.

The benefits of research are direct and indirect. Direct benefits are those that assist the utility in directing policy changes, service procedures, gas interchangeability, conversion procedures and lawsuits. Indirect benefits are those that help in directing equipment design and product improvement of existing design. The indirect benefits are as important as direct benefits, and many times they are more important because they attack problems at their source.

Let us first examine and review some of the research projects which have been a benefit to us. The first and oldest is Bulletin No. 10, *Fundamentals of Burner Design*. This bulletin is constantly being used in our service work, procedures and training school. We like to refer to this bulletin as the "Bible of the service department" and as such, we make numerous references to it when testing appliances and in our endeavor to cooperate with manufacturers, dealers, and other service organizations. Bulletin No. 10 was used exclusively in developing our last conversion policy and was partly responsible for giving us a good conversion at one of the lowest costs per meter known to the gas industry.

Bulletin No. 36, *Interchangeability of Other Fuel Gases with Natural Gas*, has been extremely helpful in determining proper peak shaving gases and in planning for new peak shaving equipment, as well as for making the best use of our old equipment.

Naturally, most of the research bulletins are used indirectly, and sometimes I hestitate to use the word indirectly, because there is a great deal of overlapping. For example, bulletins on design of appliances or appliance parts are very handy to refer to on chronic service problems, safety procedures, and in helping attorneys prepare for libel suits against our company.

Space does not permit a review or mention of all the bulletins used; here are some that are used most.

Bulletin No. 74, *Principles of Draft Hood Operation and Design*, and its companion No. 1261, *Draft Hood Design Manuals*. Those of us who have experience in servicing customers' appliances know the headaches of venting which have a direct effect on operating performance which results in customer satisletins have been a great help in solving chronic venting problems occurring in the field and sometimes the field is the only place that some problems can be corrected regardless of how well the performance may be in the laboratory.

Bulletins No. 35, 44, and 47 are all concerned with oven heat distribution and design. Each has made a contribution to baking performance which results in customer satisfaction. Approaches to chronic and hard to solve field complaints have been made by using these bulletins in conjunction with research report No. 1218, which is *A Study of Prevention of High Surface Temperatures Around and On Oven and Broiler Doors of Domestic Gas Ranges*.

In the past few years, research in water heater corrosion problems have been most helpful and informative. Bulletin No. 71, *The Application of Heat to Domestic Gas Storage Water Heaters*, may be the beginning of a new era in water heating which is one of our best yearround loads. It means the possibility of high input water heaters without appreciable heater size change.

Think of the advantages the applications of non-aerated burners when perfected and applied to water heaters, will mean to the gas industry in reduction of service costs. Our service data, taken from our IBM service analysis, shows an approximate cost of 65 cents per year per water heater for cleaning primary air ports. The entire domestic research budget in 1956 was approximately $290,000 or equivalent to the primary air service of only 1.16 cents per water heater per year if we assume an estimated 25,000,000 water

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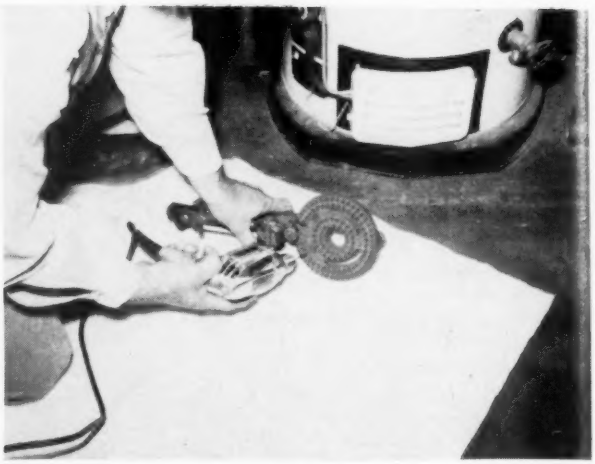
Typical classroom scene shows servicemen receiving instruction on servicing and new developments.



Serviceman converting a water heater burner.

heaters in service.

Largest and most fundamental field of research has been in the general sphere of combustion. The bulletins on combustion are too numerous to mention and this is as it should be because combustion is the heart of all appliances and is the greatest direct cause of a utility's service costs.

If we extend our own company data on appliances per meter and service costs per appliance to all meters in the United States, we approximate 100-million gas appliances now in service. This means that approximately a minimum of 300 million dollars is trickling down to the customer each year in combustion service or is being paid by the customer for service to someone.

Glancing at this cost, which is but one phase, we must conclude that we are spending a very small part of our actual service cost for research. Looking at it another way, we sometimes hear the saying that the best research is conducted in the field. This is true, there have been some knotty problems solved in the field, but it takes years for the information to get around and in the meantime we might say that this type of research costs us a part of 300 million dollars per year.

Field research is expensive and inefficient. If it only amounts to 1 percent of estimated service costs or $3,000,000 does it produce ten times the results of planned research costing only $300,000?

Bulletin No. 69, *Research in Pilot Burner Design, Construction and Performance.* This bulletin proves very convincingly that there must be copper free alloys for use in pilot construction. Even though this was known from field experience, there had never been any absolute data on this subject and consequently it was not accepted in all parts of our country. Pilot foreign matter as indicated by our service analysis accounts for 7.8 percent of all our heating calls which at the present time amounts to $30,000 per year for our company.

Many research projects underway at the present time are refinements of what has already been mentioned and several new ones on refrigeration, air-conditioning, incinerators, and clothes dryers, when completed, will add further benefits to our service and provide new outlets for building our gas load.

How Research Saves Money

Actual cost figures show what our company has actually saved by using research bulletins that have been published in the last 20 years.

Our largest direct saving was when our company converted from an 800 Btu mixed gas to straight natural gas. In this conversion, all of the regular conversion steps such as drilling, orifice change, and primary air change had to be made and therefore the appliance work and training involved was the same as a conversion from manufactured gas to straight natural gas.

Our policy, conversion procedure, orifice charts, and training curriculum was set up entirely from Research Bulletin No. 10. This developed into some radical changes from other conversions. However, we felt that we were correct because Bulletin No. 10 coincided with our field experience. At the start, we received some complaints that the inputs were too low. (The inputs were calculated to be 20 percent lower during the conversion period but would straighten out as soon as natural gas was turned into the mains.) These complaints were handled by special men who explained to our customers what we were trying to do and after explanation the customer was generally satisfied to wait. The complaints died out about a month after we started.

The real pay-off came after conversion was over and straight natural gas was turned into our mains. The flames on our customers' ranges returned to normal height and many customers called to express complete satisfaction with the new type of gas. Our complaints dropped off sharply and we did not experience the normal aftermath of complaints on smoky or yellow flames.

For this conversion we trained 200 men by using a training guide developed from Bulletin No. 10, and only one of the men had had any previous experience on gas.

Conversion was made in 1947, with a tight labor market, consequently our rates of pay were high. Here are the statistics and cost of that conversion:

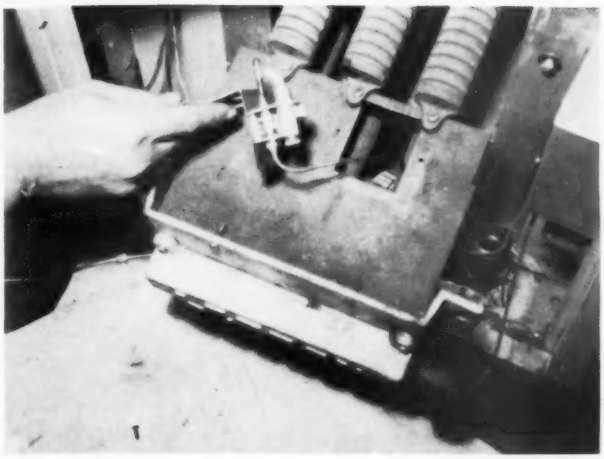
Reports of more costs for conversion work in 1947 from large companies showed costs running from $10.00 to as high as $25.00 per meter. If we take the lowest report costs of $10.00 per meter we calculate a saving of —

$$139{,}623 \times (10.00 - 4.59) =$$
$$139{,}623 \times \$5.41 = \$755{,}360$$

Therefore, we are justified in concluding that the use of research bulletins in 1947 helped our company save at least $750,000.

Pay-Off is in Service

What benefits have we realized since 1947? Using research bulletins for our conversion, and experiencing the resultant savings plus customer satisfaction spurred us on to establish training schools and increase our supervision which would increase our communications to old and new employees in teaching new policies and information gathered from all sources including research. The result of this program since 1948 is as follows:



New non-linting pilot is installed on a furnace burner.

Converting a furnace burner. Serviceman is guided by table (in book in background) that was developed from Bulletin No. 10.

Ranges converted	148,293
Refrigerators converted	11,090
Water heaters converted	104,804
House heat furnaces converted	43,795
Space heaters converted	4,788
Hot plates converted	47,792
Industrial furnaces & equipment converted	3,327
Gas mangles converted	1,401
Incinerators converted	219
Clothes dryers converted	172
Miscellaneous converted	4,218
Total appliances converted	369,899
Total Orders handled	163,718*
Conversion complaints	808
% of complaints to completed orders	0.5%
Man days of labor used	27,995

*Each living unit and each place of business was considered as one order regardless of number of appliances.

Orders Completed per Man Day (10 Hours Day)	5.8
Total Meters	139,623
Total Cost (Material and Labor)	$640,000
Cost per Meter	$4.59

Year	House Heat Customers	House Heat Service Calls	Calls Per Customer
1948	54,000	60,000	1.12
1949	65,750	62,000	.93
1950	80,000	81,600	1.08
1951	94,000	92,165	0.98
1952	109,500	95,804	0.88
1953	129,730	100,039	0.77
1954	141,950	112,386	0.80
1955	153,100	123,007	0.80
1956	161,420	124,714	0.78

Year	Firm Customers	Domestic Service Calls	Domestic Calls Per Customer
1948	146,035	130,800	0.90
1949	151,107	132,000	0.88
1950	152,770	130,653	0.86
1951	160,478	134,871	0.84
1952	166,008	140,708	0.85
1953	173,542	142,323	0.82
1954	180,434	144,575	0.80
1955	188,465	147,038	0.78
1956	199,011	159,185	0.80

The above table shows a reduction in "House Heat" calls from 1.1 to .8 or .3 of a call per year. At the present time, this represents 161,000 × .3 = 48,300 calls per year.

The "Domestic" table shows a reduction of .9 to .8 or .1 of a call per year per customer. This represents 199,000 × .1 or 19,900 calls per year.

The total reduction in calls is therefore 68,200 calls per year. Assuming a cost of $3.00 per call, this amounts to $204,600 cost reduction per year in service calls.

If we were to exclude the additional calls of the last few years due to the promotion of incinerators and dryers, the above cost reduction would be greater. Naturally, we cannot attribute the entire cost reduction to research, because other changes have taken place such as training, increased supervision, and better quality appliances, however, let us not forget that research is responsible and is the fundamental cause of our training and the production of better appliances. If it hadn't been for appliance research and such improvements as CP ranges, automatic ovens, top burner temperature control, etc., the number of customers may have decreased instead of increasing as they did.

It can be expected that most of the utilization research will be a direct benefit to the manufacturer and an indirect benefit to utilities, and this is the way it should be, because we are interested in quality of performance before the appliance is in the field. Most manufacturers are making good use of the research accomplished under the PAR Program. This is apparent from the improvement in appliances in the last ten years. I realize that manufacturers do a lot of research on their own, and because of this some manufacturers may feel that the PAR Research Program accomplishes very little for them. However, I am sure that if all manufacturers will take inventory of the number of times that some fundamental research conducted by AGA has influenced or aided their own research, they will conclude that the program is worth while. Money spent on research to produce appliances that require fewer service calls or that will reduce the time required per service call, will help the industry overcome rising labor costs.

Use Makes Research Effective

The problem of an effective research program is in the ultimate use of research conclusions. Here is where we in the utility business fall down. We expect to be able to pick up a research bulletin and by quick reference find an answer to our field problems. This is Utopia and will not happen. The utility must be willing to designate someone or several persons to study the bulletins and pick out the principles or conclusion that will aid them in policy, training, and service hints. No utility or manufacturer will ever benefit from any of the bulletins by just glancing through them or filing them away.

If anyone is really interested in knowing what research has taken place and in what fields they can be helped, I suggest they write AGA for their catalogue of research publications covering ten years of PAR Research. This catalogue gives in abstract form all research projects for the past ten years and is a handy reference when in search of solutions or knowledge.

All research committees are anxious to hear from manufacturers and utilities on future research projects. It takes a long time to initiate a research project because of investigation and waiting for funds to become available, however, all research projects are started by request from someone and the more we hear from, the better job we can do in planning and evaluating a program.

Acknowledgment

This article developed from a talk given at the 1957 AGA Research and Utilization Conference, Cleveland, Ohio.

★ ★ ★

American Gas Fundamentals

A Continuing Educational and Refresher Course in Gas Technology, Management, Equipment, Operations, and Utilization

Natural Gas Production and Field Processing

PART 1

PRODUCTION of natural gas in the United States has increased steadily since the Civil War. For instance, in 1898, total U. S. production of natural gas was about one third billion cubic feet daily. At the beginning of World War 1, gas was being produced at the rate of more than 2-billion cu ft per day. There was a slight drop during the 1921 recession, but the general production trend was upward. In 1930, the United States produced natural gas at the rate of 5⅓ billion cu ft per day.

Production dropped to 4.4-billion cu ft during the worst part of the depression, but again increased, and in 1937, natural gas was being produced at the rate of nearly 7-billion cu ft per day.[1] In 1955, the nation's gas wells produced about 30-billion cu ft of natural gas daily.

Although waste in crude oil production has been great, the waste of natural gas has been even greater. Indeed, more natural gas was blown into the air and wasted during the period from 1923 through 1930 than was used,[2] and as much was wasted as was used during many of the previous years.[3]

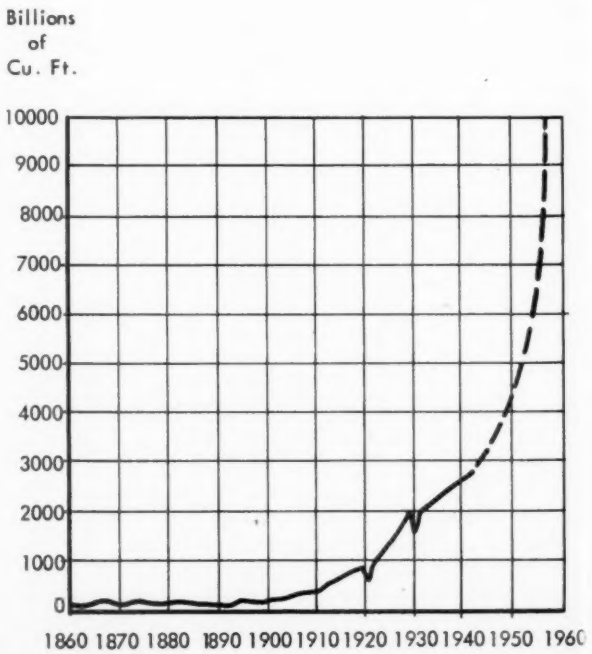
Notorious past examples of gas waste, such as 300,000,000 cu ft daily in Cushing field, Oklahoma; Cotton Valley, Louisiana, and a waste of 1-billion cu ft daily in 1934, in the Texas Panhandle, are no longer prevalent. First, regulatory bodies and legislatures have enacted and enforced anti-waste laws; second, pipelines have provided a means of transporting natural gas to market, and third, (perhaps as a consequence of the first two) the price of natural gas compared to its cost has made its conservation profitable.

The rapidity with which the natural gas industry developed in the decade from 1920 to 1930, may be attributed, in part, to improvements in and the use of several construction tools; such as ditch digging, pipe-bending, coating and wrapping machines, and the side-boom tractor. These tools, in conjunction with welded joints and seamless pipe, have resulted in wide distribution of fuel from field to industrial areas.

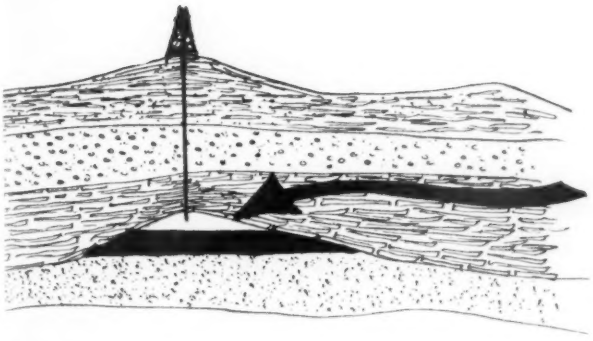
Texas Panhandle gas supplies Detroit and other eastern markets; gas from Louisiana and Texas Gulf Coast have come to feed 60,000,000 cu ft daily to steam turbine boilers for electrical generation at the government's Oak Ridge, Tennessee, atomic energy plant. New iron ore smelting processes in East Texas use natural gas. No longer used exclusively for carbon black manufacture and home heating, gas is being demanded in many industrial enterprises, the most notable of which is the new and growing petrochemical industry. During World War II, gas was the energy used to manufacture explosives, particularly toluene and ammonium nitrate. Plants constructed during the war were later sold to commercial interests. Other industries use gas to manufacture a myriad of commodities, which range from cement to rubber, cloth, and plastic. In the Texas Panhandle, gas is used to refine zinc ore.

Expanded Markets

Transmission of gas has come into more and more prominence. During the 20 years from 1931 to 1951, more than 60,000 miles of gas transportation were laid, and more than 100,000 miles of line were laid during the six years fol-



Annual production of natural gas in the United States, period 1860 to 1956.



Gas cap over oil reservoir.

lowing World War II. Discovery of gas in Canada and the Four Corners area has completed the network of lines and extended gas transmission into the northwest.

In 1950 only one-third of the gas produced in this country was casinghead gas. Previously, higher percentages had come from oil wells. In recent years, however, gas wells have come to furnish more and more of the supply. That is not to say the oil man is unconcerned with gas from his oil wells. On the contrary, casinghead gas has become so valuable that the oil man finds its conservation of considerable importance to him.

Casinghead gas is usually produced in comparatively small amounts from low-pressure oil wells, many of which are scattered over wide areas, making it difficult to collect and handle the product which, unlike crude oil, cannot be stored in large quantities on the surface.

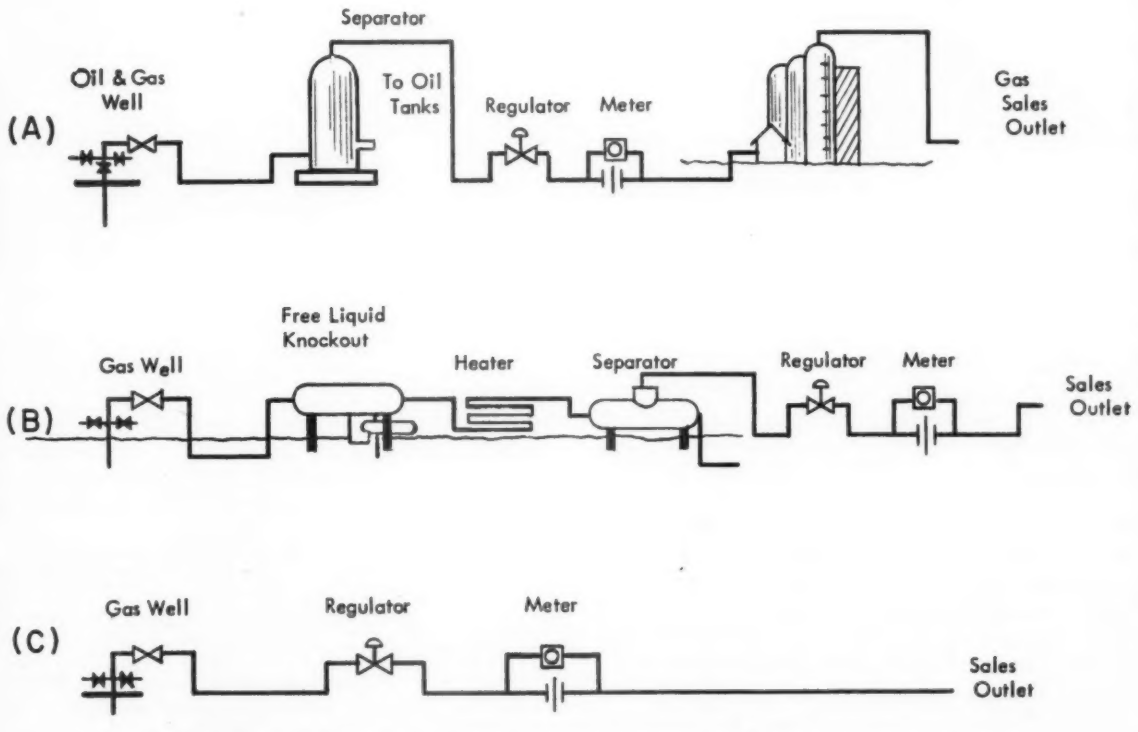
Much casinghead gas is produced at low pressures, and therefore cannot be fed to transmission lines or used for lease fuel purposes unless it is repressured. Repressuring requires large engines and compressors. Miles of gathering pipeline systems are required to bring the gas to the compressor plant. Consequently it becomes necessary in many instances for operators to cooperate in a joint construction of gasoline plants or compressor stations into which all gas within that immediate area can be delivered.

In some instances, gasoline plant equipment requires a suction on the gas lines to bring low-pressure natural gas through many miles of gathering system.

Casinghead gas is utilized by various methods. It is ordinarily laden with rich hydrocarbons which may be stripped from it. These heavier-than-air hydrocarbons — propane, butane, and pentane, and in some instances, ethane — are removed, leaving the lighter than air methane as the chief constituent of the gas remaining.

These rich and heavy hydrocarbons are valuable, and if these are *stripped* from casinghead gas and separated, they become the most valuable product of the "casinghead plant," or the stripper plant that removes it. By marketing these liquid petroleum gases, as well as the resultant methane fuel gas, the gathering and stripping process becomes profitable.

Liquefied petroleum gases (LPG), held under pressure, are marketed as fuel for drilling rigs, farm establishments, and industrial equipment, plus numerous other uses. Some LPG is used by gas utilities for peak-shaving.



Typical flow installations. (A) shows hookup on oil and gas well with gas flowing to gasoline plant. (B) shows wet-gas well hookup. (C) shows dry-gas well hookup. These are only a few of the variations possible, depending on type of gas produced and field processing required.

For your convenience in filing, this page scored for easy removal

The remaining lighter gas, stripped of its heavier hydrocarbons, may be utilized by

1. Repressuring and using as lease fuel, or marketing to transmission lines,

2. Repressuring and returning to the reservoir to implement the production of oil,

3. Repressuring and injecting into depleted sands, where other unproduced hydrocarbons attach themselves to the gas; the gas is produced again, stripped, and recycled into the reservoir,

4. Repressuring and returning to wells to operate gas lift equipment, and

5. Burning in carbon-black plants.

Natural gasoline (casinghead gasoline) is recovered from associated gas through the use of compressors and absorption plants, either by one or both methods.

The compression plant depends upon the change in pressures and temperature to condense out the liquid petroleum gases.

The absorption plant "scrubs" the rich gas with a mineral oil which has an affinity for hydrocarbon liquids. The gasoline is then separated from its host oil by heating, changing the gasoline to vapors which are caught and distilled. The process is duplicated in a continuous flow through towers and over heating coils.

Casinghead gas comes out of solution when reservoir pressure of the oil is reduced. As the flow valve is opened and the gas and oil mixture rise, some of the particles begin to change from liquid to gaseous state.

If the pressure of the solution is reduced too quickly, the lighter gas particles "boil" out of the solution at a rapid rate, and carry with them particles of liquid oil. Operators, therefore, install multiple stage separation equipment to prevent this loss in liquid volume. In multiple separators, pressure is reduced slowly and in stages, allowing only free gas to escape to the gasoline plant gathering system.

The separator, therefore, is usually the first piece of equipment used to remove casinghead gas from its attendant oil. From the separator it is piped to field compressor stations, if necessary, and then to gasoline plants. In the event the gas is "sour" and contains sulfur, it is cleaned in a desulfurizing plant, or burned in carbon black plant. If it contains water, it must be dehydrated before it can be transported in transmission lines.

Non-Associated Wet Gas

Some gas wells produce gas that is rich with condensate, or liquid hydrocarbons. These liquids are really in a gaseous phase until gas is produced and its pressure decreased. Rich, non-associated gas is usually produced from a high-pressure well. It goes through a separator or a free water knockout. Liquid hydrocarbons as well as water are partially removed. The remaining wet gas is sent to a heater to prepare it for further reduction of pressure, or to a cold separation unit, where water and condensate are removed.

At some point in non-associated gas production, the amount of gas being produced is measured, usually with an orifice meter. This measuring is done generally after liquids have been removed, since free liquid in a meter run will build up against the orifice plate and interfere with accurate recordings of flow. A non-associated gas well may flow through the following equipment:

1. Flow-Valve
2. Separator
3. Heater
4. Dehydrator
5. Cold Separator (replaces 3 and 5 in some installations)
6. Meter
7. Pressure Reducer, and
8. Transmission Line.

Dry Gas

Some gas is produced with very little liquid of any kind. It may be passed through the separator, or it may be flowed directly from the wellhead to the meter run, to a pressure regulator and to the transmission line.

TYPICAL GAS FLOW EQUIPMENT

Type of Production	Destination of Gas	Possible Items of Equipment
1. High-pressure gas condensate	Transmission line	a. Free liquid knockout b. Cold separation unit c. Condensate storage d. Heater e. Dehydrator unit f. Flow-line heater g. Meter run and meter
2. Dry gas at medium or low pressure	Transmission line	a. Heater b. Dehydrator unit c. Free liquid knockout d. Meter run and meter e. Compressor unit
3. With crude oil at medium or low pressure	Gasoline plant	a. Oil and gas separator b. Tank battery c. Meter run and meter d. Compressor unit

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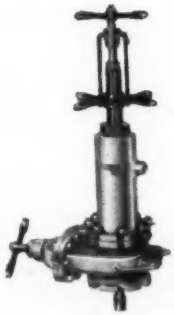
The Federal Oil Conservation Board, *Report V*, to the President of the U. S., 1932, page 52.
Report 1, 1926, page 7.
Henry A. Ley, *Geology of Natural Gas*, 1935, page 1096.
3. America's Power Resources, Chester G. Gilbert and Joseph E. Pogue, page 147.

Acknowledgment

This chapter on *Natural Gas Production and Field Processing* has been prepared by Jack L. Wiggins, consultant with the firm of Compasco. Wiggins was formerly special training consultant for the American Petroleum Institute, petroleum training specialist for the University of Texas, and is now general secretary of the National Oil Scouts and Landmen's Association.

Part 2 of this chapter will appear in the next issue.



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Suggestion Systems — Profit Sharing That Makes Every Employee a 'Partner'

Ernest W. Fair

"What! Make our employees partners in the business? Profit sharing isn't for us. We're too small and there just isn't any business sense in the program as it would apply to our business."

This gas utility executive was undoubtedly correct — if he were speaking solely in the sense of sharing dollars-and-cents profits on the familiar plans in existence today. We already have employee ownership of company stock programs that do a great job along these lines.

But there is another type of "profit sharing" program that makes a partner of every employee in any size gas utility firm (and that requires no supervision by unions or governmental bodies). This is through use of suggestion systems that encourage each and every employee to be constantly thinking and planning on better ways to do his own job no matter what that job may be.

Suggestion systems, when flawlessly operated, make a "partner" of every man and woman on the payroll in building the efficiency and profit making potential of the gas utility. They can be used in any size organization, large or small. With very few exceptions such programs have been so successful that they have been expanded from year to year by every firm using this method of building profits.

Suggestion systems can be a "pain in the neck," or the most welcome idea we can devise. Based on the actual experiences of many of the firms mentioned above, here are some ideas we can use in practical application of such a suggestion program that will make every man and woman on the staff from office to field an effective "partner" in generating ideas that will save money for the company and help it to attain smoother and more efficient operation.

Have an established routine for every employee to use in passing along such suggestions. Experience shows the written form is preferable to any oral method. Many employees are hesitant to walk into the boss's office with their ideas and often they have very worthwhile ones to suggest. Where only an oral system is available, these are lost to the company. Passing oral suggestions through a long chain from the field itself into the main office will also complicate the procedure.

Where such suggestions are presented anonymously, greater participation by employees will result. The usual procedure is to provide a number of standard forms by a locked suggestion box at one or more places. Each is numbered and each has a duplicate numbered tab. The employee fills in his or her suggestion on the form and retains the duplicate numbered tab.

Under the foregoing method, if the idea is found unacceptable, no one knows by whom it was offered and there is no feeling that the executives of the company may look down on the individual for presenting an unacceptable idea.

The regular routine should also call for a system of considering these ideas. In the small organization, the chief executive himself usually handles such suggestions. However, where possible, a better evaluation of every suggestion can be obtained by a committee of three consisting of an executive, a superintendent in that particular department, and one of the employees.

After such ideas have been considered and passed on, the numbers of those found of interest can be posted and the employee come forward with his or her duplicate numbered tab for identification and bonus reward.

Collect suggestions frequently for it has been found that where they are left to accumulate in the box over an extended period of time interest will slacken on the part of employees. There is also the possibility that someone may suggest a very good idea that requires immediate application to be effective. The usual procedure is to collect these two or three times a week.

Carefully analyze each suggestion and see to it that employees know that this is being done. *"Goofy idea — wouldn't work,"* is a snap judgment method that not only can wreck the whole system but cause us to overlook an idea that subsequent analysis revealed to be very worthwhile even

though its value appeared doubtful on first examination.

All employees should know what we are doing in making such study and analysis of their ideas. Where a program has built up to very active participation by employees, a weekly report of what is being done on a small bulletin board by the suggestion box will greatly increase employee interest in the whole idea.

Make sure that awards are fair and commensurate with the actual value of the idea to the company. Various firms use cash, government bonds, company stock and merchandise as awards. Most successful system are those based on actual cash. The current trend is to have a minimum award of $2, $3 or $5 with no maximum limit. Most plans provide for payment for each adopted suggestion on a basis of its value to the company. When the savings brought about by the suggestion can be determined, it is the usual practice for the employee to be given 10 per cent of the net savings during the first year his idea is used.

An occasional large reward, where it is justified, urges every man and woman on the staff to greater interest in the program. Even though small sums are the usual awards, the very fact that one such large reward has been made and that there is always the possibility of any employee winning it again incites their efforts.

Handling of suggestions is of vital importance and we should always make sure that every action of those passing on them is understandable, reasonable and logical from the viewpoint of both the employee and the management. Taking the trouble to explain exactly why each idea was accepted or rejected in the form of a periodic bulletin will do a great deal toward maintaining interest in the whole suggestion program; is just as important as posting and publicizing actual cash awards made from time to time.

Everyone wants to know the winners' names and the amounts. In small utility companies there is a tendency to limit this to the individual to whom the award is given. In many such instances he or she never bothers to pass along what has been done and other employees are not even aware that such an award has been made.

The fact that awards, no matter how small, are actually being made, is the spur to increased interest by every other member of the staff. Winners' names and their awards should be posted on a bulletin board and left there for a sufficient length of time to make sure everyone knows about them.

Let everyone participate for we can never guess where a good idea will originate. Firms who limited participation in such a program to an affected section of the business soon found that they were receiving no ideas of any kind from other departments. Experience has also shown that a very good idea applicable to the firm can come from either the office or the field.

In those organizations where every employee on the payroll is free to suggest ideas that can be used in each and every department, their detached viewpoint often brings up something that would never occur to the man or woman right on the job.

Such suggestions generally embrace ideas that cover phases of the problem not only in one department but as it affects various other departments and are therefore much more valuable as well as being easier to analyze and adapt to immediate use.

The gas utility firm without a suggestion program is depriving itself of many "partners" who can contribute to its more profitable operation with a minimum of financial outlay and no interference to executive management. Where every employee is a "partner" through the suggestion system, the company is always at the head of the parade in that business area. * * *

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THE LAW and the gas utility industry

Prepared by Leo T. Parker, attorney at law and contributing editor

Who's Liable In Gas Explosion Accidents?

KNOWLEDGE of the cause and outcome of recent higher court decisions in which many persons and firms other than gas corporations were held liable for gas explosions, will assist readers to conduct their business in a manner designed to avoid future legal controversies.

Jury decides contradictory testimony. A reader has asked this question: *"If the testimony is contradictory as to whose negligence caused a gas explosion, who is liable?"*

The answer is: The jury will make the decision.

Recently, a higher court upheld this law in the case of *Dixie Furniture Company v. Deason, 293, S. W. (2d) 706.*

Testimony in this case showed that gas exploded. This gas had escaped from an improperly capped gas line. Further testimony showed that the Dixie Furniture Company sold to one Shields a quantity of furniture, including a gas range for the kitchen. This stove was installed in a house rented by Shields from Early. Later the Dixie Furniture Company repossessed the gas stove.

A woman named Deason, rented the house from Early where Shields had lived. The next day she had the gas company send out a man to light the hot water tank. An employee of the gas company came out to do this work. He turned on the gas and struck a match to light it. There was an explosion, and both the gas company's employee and Mrs. Deason were burned. They both sued the Dixie Furniture Company and Early, owner of the house, for damages.

During the trial, the testimony showed that the capped pipe at the kitchen range location was leaking. The gas pipe for the kitchen stove was open and uncapped, and the gas escaping from the open pipe caused the explosion.

The evidence is equally convincing that Shields, the former occupant of the house, on the one hand, or Maness and Butler, employees of the furniture company, on the other hand, disconnected the stove and failed to put a cap on the open end of the gas pipe.

Shields testified positively that he did not disconnect the stove; that he notified the Dixie Furniture Company that they could repossess the furniture and stove, and then he left town. On the other hand, the employees of the furniture company testified that they did not disconnect the stove; that when they got to the house where the stove was located, the stove had been disconnected and moved out into the center of the floor.

The jury listened to all of the testimony and held the Dixie Furniture Company liable in damages for injuries to both the gas company's employee and Deason. The higher court approved this verdict, and said:

"The jury had the advantage of being able to observe the witnesses and their demeanor, and was in a much better position than this court is to judge the credibility of the witnesses."

Must Follow Law

According to a late higher court decision, failure of any person or corporation to comply with state, county, or city laws pertaining to connections of gas appliances may result in heavy financial loss.

For example, in *Benoit v. Wilson, 258 S. W. (2d) 134,* facts were disclosed, as follows:

One, Wilson, signed a tourist court register and entered a cabin. Wilson had difficulty in opening his cabin and came to the office and asked for assistance in opening the door because a key was broken off in the lock. Soon afterward a gas explosion occurred, which killed Wilson.

The dependents of Wilson sued the proprietor of the motel and the gas company for damages and proved that an ordinary rubber hose was used to connect a gas heater in lieu of rigid metal connection, as required by a city ordinance.

In view of this testimony the higher court held the motel proprietor liable to Wilson's dependents for $23,274 damages.

The higher court refused to hold the gas company liable and said:

"The gas escaped and therefore the use of the hose was a proximate cause of the explosion and the resulting injuries and death of Wilson. Admittedly, the appellant (motel proprietor) was using a rubber and fabric hose in violation of a valid ordinance of the City, and this act was negligence per se. The City Ordinance required rigid metal connections. The jury found that the explosion and resulting injuries and death of Wilson were not the result of an unavoidable accident."

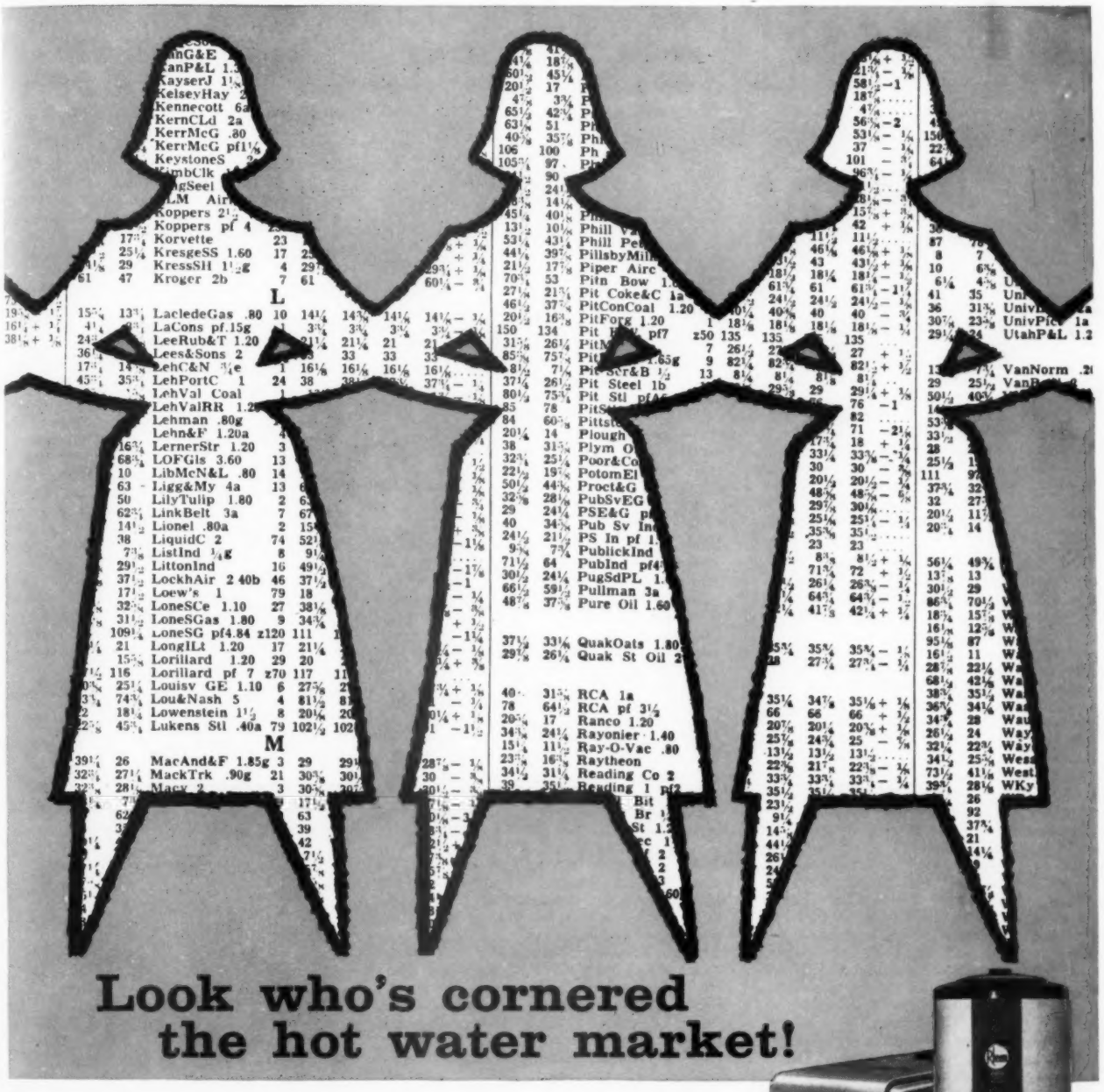
Hence, violation of the user of gas of a city ordinance may result in full responsibility of the property owner or user. On the other hand, if the testimony fails to show that the gas company's officials or employees had knowledge that the gas consumer was violating the city ordinance, the property owner is solely liable. This higher court explained that, if the gas corporation had continued to supply the gas when knowing that the gas consumer was violating the above mentioned city ordinance, the gas company would have been also liable, in combination with the gas consumer or property owner.

For example, in *Liberty Homes, Inc. v. Stratton, 272 Pac. (2d) 871,* the testimony showed that a gas corporation's employee without request, notice, or warning, entered a private house and turned on the gas for a furnace. The higher court held the gas company fully liable in damages to persons and property for a subsequent gas explosion. The higher court said:

"A company which produces and furnishes gas is bound to use such skill and diligence in its operations as is proportionate to the delicacy, difficulty, and nature of that particular business."

For further comparison, see *Pulaski Housing Authority, v. Smith, 282 S. W. (2d) 213.* In this case tenants of an apartment building were seriously injured by a gas explosion. The higher court held the landlord, and not the gas corporation, liable in damages to the tenants. This court explained that the landlord brought appeal in error. The landlord, in failing to make inspection of new apartments after accepting them from a contractor, (which would have revealed defective condition in the gas pipe) was negligent and liable as result of explosion.

The higher court held that the gas company, which supplied the gas, was not responsible for the explosion nor liable for the injuries to the tenants. *



Look who's cornered the hot water market!

Rheemglas Water Heater / Rheem Hot Water Boiler

The combination of these two products is helping Rheem contractors walk off with the lion's share of the hot water market. No gimmicks, no fancy deals behind it. Just a good healthy stock of best sellers!

The Rheemglas Water Heater has a tank lining made from the famous Rheem Frit. It stands up better — actually resists the chemical action of hot water. And *this* water heater is made to be seen. For it's as modern outside as it is inside!

Another example: Rheem Gas- and Oil-Fired Boilers. Offer *wet-base* design for greater fuel economy and safety. Water circulates around entire fire-box and through boiler.

Offer *staggered-pin* construction. Hot gases are scattered to *every* heat-absorbing surface. Too, controls are automatic and shielded from dust and dirt beneath the smart, enameled jacket.

So come on — get your share. Call your Rheem Distributor now!

YOU CAN RELY ON Rheem THE BIG NAME IN COMFORT PRODUCTS FOR THE HOME

water heaters, steam and hot water boilers, central air-conditioning, warm-air furnaces, plumbing fixtures and water softeners

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NEWS ABOUT THE GAS UTILITY INDUSTRY

Firefighting Lesson. Some 30 North Shore Gas Company Supervisors, including company officers, operated firefighting equipment during a recent demonstration conducted at the north plant in Waukegan. Supervisors operated carbon dioxide, soda-acid, dry chemical, and foam extinguishers as well as regulation water fire hoses. Five different fires were touched off including a gasoline pan fire, a Class "A" wood and paper fire, a gas fire, an open ditch fire, and a baffle plate fire to show how heated metals can re-ignite a fire if not cooled down below the auto-ignition point. Conducting the unique demonstrations were Robert Hund and Elvin Griffin, both of Waukegan, who had attended the Ansul Chemical Company firefighter school at Marinette, Wisconsin, last year.

New Distributor — Day & Night Mfg., Co., Monrovia, California, has recently appointed Biggs Pump & Supply, Inc., Lafayette, Indiana, as a new distributor of the entire Day & Night Line of water heating equipment.

The Consumers' Gas Company of Toronto, Ontario, has retained Fantus Factory Locating Service of Chicago and New York City to consult with it in connection with the company's program of industrial development throughout its service area.

Christmas Promotion. U. S. Steel Corporation has announced a three-phase program to launch its fourth consecutive Christmas promotion of major appliances — "Operation Snowflake." Scheduled to start on November 18 and run for six weeks, "Snowflake" will be based on the slogan, *"Make It a White Christmas — Give Her a Major Appliance."* Phase No. 1 of the promotion is a sales-builder advertising campaign, including newspapers and network radio and television. Phase No. 2 is alerting retailers and providing them with basic materials to take advantage of the promotion. Tie-in advertising will appear in 25 advertisements appearing in 11 trade magazines. Direct mail will invite some 25,000 previous participating retailers to share in the profits of the promotion again in 1957. Phase No. 3 is the organization of all groups interested in the sale of major appliances into a selling team.

American Meter Company's totally owned subsidiary, Philadelphia Pump and Machinery Company, has been merged into and become the Philadelphia Pump Division of American Meter Company. The newly-merged subsidiary manufactures controlled capacity pumps and liquid proportioning equipment and specializes in high pressure requirements of modern chemical and petrochemical processing.

Folder Featuring Top Burner Heat Control is now available to gas utilities for imprinting. Robertshaw-Fulton has designed and produced a 3-color folder to help utilities "wake up prospects to the most amazing gas range convenience in 50 years." Helpful temperature charts have been given ample space. Folder is designed for a give-away piece for sales floor and home demonstration calls, or direct mail distribution.

Two top executive appointments and the formation of a new streamlined marketing organization have been announced by Permaglas Division of A. O. Smith Corporation. W. T. Halket has been named to the newly created position of marketing director for the division, and J. W. Burleson, formerly general sales manager of heating and air conditioning equipment, becomes general sales manager for the Permaglas division.

Tractor Training School. Two huge vans containing nearly $50,000 worth of tractor assemblies and components are bringing a complete "factory" service training school directly to J. I. Case industrial dealers throughout the nation. Staff of Case servicemen accompany each mobile training unit to present 3-day courses in maintenance and service of Case Terra-Trac wheel and crawler tractors and equipment in various dealers shops.

Pitt's Purchase. Assets of the Insul-Mastic companies of Summit, Illinois, producers of industrial protective coatings, have been purchased by Pittsburgh Coke & Chemical Company. Newly-acquired facilities, located near Chicago, will continue production of the Insul-Mastic line of asphaltic coatings and insulating materials for sale through the parent company's Protective Coatings Division. The Insul-Mastic sales organization will be integrated with the Division's sales force.

Northern Illinois Gas Company has mailed out letters to approximately 30,000 customers authorizing them to use natural gas for space heating. These authorizations cover all customers who had applied for this service on or before July 16, 1954, for existing homes and on or before September 23, 1954, for individual new homes. In accordance with the gas restriction order under which the company is operating, gas heat authorizations are issued only for single family dwellings and those authorized have 12 months in which to complete their installations. Based on past experience, about ⅔ of those offered gas heat will accept and install the necessary equipment.

Columbia Consolidation. Binghamton Gas Works and The Keystone Gas Company, Inc., have been consolidated to form a new company, Columbia Gas of New York, Inc. The merger came as phase two of Columbia Gas System's simplification plan for Pittsburgh Group Companies. The first was the incorporation of Natural Gas Company of West Virginia into the Ohio Fuel Company. Columbia Gas of New York, Inc. will operate all distribution properties in the state of New York. It serves some 55,000 customers in the Binghamton, Olean, WatkinsGlen, Deposit, and Walton areas.

Heath Leakage Surveys Expands Into Canada. Establishment of a new Canadian company, and the opening of offices in Canada has been announced by Heath Survey Consultants, Inc.

It Pays To Suggest — Thaddeus A. Zamirowski, a supervisor of service and fitting, was recently presented with a check for $1,850 by Eskil I. Bjork, chairman of The Peoples Gas Light and Coke Company for a suggestion to substitute aluminum tubing when repairing copper tubing in automatic gas water heaters and space heating equipment. The award, largest given by Peoples Gas in the 33 year history of its employee suggestion system is the second largest ever presented a member of the public utility group in the National Association of Suggestion Systems. Peoples Gas, after a year of study, estimated that Zamirowski's suggestion would reduce the number of service calls per year by 3,147.

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Engineers, Designers and Manufacturers of
LP-GAS STAND-BY PLANTS
and special equipment for every requirement
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★ Standby
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Industry News

Construction is underway on a new phase of the program to bring more natural gas to the New York City-New Jersey-Philadelphia metropolitan area. Significant portions of the $54,000,000 expansion project of Transcontinental Gas Pipe Line Corporation were given the "go ahead" by the FPC issuing a temporary certificate allowing the start of construction. The temporary certificate enabled work to start on a substantial part of the facilities required to step up daily allocations this winter to the metropolitan area by more than 83 MMcf of gas. Temporary certificate includes 247 miles of new purchase laterals, mostly 24-in. and 16-in. pipe, and 57 miles of 36-in. and 30-in. mainline "loops" in Louisiana, Mississippi, Alabama, Georgia, and South Carolina.

Safety Award Received for Third Time. At the National Safety Congress in Chicago October 23, the AGA, whose member companies helped the industry improve its safety record in 1956 for the ninth straight year, will receive the Council's *Association Safety Award* for the third time in five years. AGA is one of 11 associations selected for the award this year.

Neptune Meter Company Has Completed the purchase from Frederick Brown of a four-level, city block square, factory building formerly occupied by the Columbia Broadcasting System, in a transaction involving approximately $2,000,000. The building occupies the area from 47th to 48th Avenue and 34th to 35th Street in Long Island City, New York. It is situated in the center of the Queens County industrial district, within easy access of transportation. Purchase of the building is another step in Neptune's expansion and diversification program started more than five years ago. The new plant, with more than 270,000 sq ft of interior floor area for manufacturing and operating activities, is tagged for the Liquid Meter Division's manufacture and assembly of petroleum and LP-Gas meters, industrial liquid meters, and registering and accessory components used with these products.

Gathered for ground breaking ceremonies for the new $250,000 Western Research Center at Anaheim, California, are officials of Robertshaw-Fulton Controls Company and community leaders. From left: Thomas H. Jeffers, general manager, Western Research Center; Robert L. Wehrli, vice president and general manager, Aeronautical Division, at Anaheim; Wilbur F. Jackson, vice president and general manager, Grayson Controls Company Division, Long Beach; Fred Kreim, Anaheim Chamber of Commerce; Charles A. Pearson, Mayor of Anaheim, and Oscar Schultz, president of Anaheim Chamber of Commerce.

Clean Living... EASTERN STYLE

People along the Eastern seaboard, from the Piedmont to the Bronx, are mighty pleased with the natural gas they're getting from Transco-served utilities. They're calling on us to deliver more every year, offering the steady demand of the most people with the greatest need for clean fuel.

HELPING DEVELOP A MARKET FOR TEXAS-LOUISIANA NATURAL GAS

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

Need this article for your files? Tear it out and tuck it away!

LP-Gas
STAND-BY PLANTS

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Stand-By—Peak Load Shaving
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Whatever your requirements may be, you can purchase ALGAS equipment on an economical basis. Plants start with tanks of 1000 gallons capacity and range upward.

Packaged, self-contained fully automatic gas plants. Vaporizers—Vaporizer-Mixers—Mixers. Complete Engineering Service Available.

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SAFETY
by SURVEY
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by REPAIR

Hundreds of gas distribution firms have materially improved their safety factor and substantially reduced "unaccounted-for" by employing SOUTHERN CROSS FORESTERS to locate and repair their street leakage.

There is a plan to fit your system whether you maintain 5 or 5,000 miles of main.

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Strong trend toward higher capacities in gas central heating equipment is shown in a GAMA study of sales over a five year period. Larger proportion of production for both gas-fired furnaces and boilers for residential use has gone into units of greater Btu-input. Smallest sizes, as measured in heating capacity, show the largest declines in percentages of total output.

New Research Program To Aid Piping and Corrosion Engineers. A separate research and development department has just been established by The Tapecoat Company of Evanston, Illinois. Heading the research staff will be Dr. Bernard Wolnak, president of Mid-West Laboratories. Development will be under the direction of John Branca. The research and development department will be concerned with protective coatings for pipe, pipe joints, fittings, and couplings.

Green Light On Little Big Inch Reconversion. Texas Eastern Transmission Corporation has been authorized by the FPC to remove a 1168 mile segment of the Little Big Inch pipeline from natural gas service. The section is being reconverted to service as a common carrier of petroleum products. The 1168 mile section extends from Baytown, near Houston, Texas, to Moundsville, West Virginia.

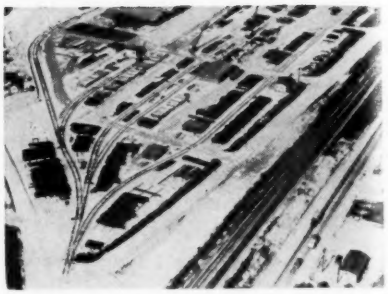
The Seamless Rubber Company of New Haven, Connecticut, has purchased the plastic pipe fittings firm of E & A Sales, Inc., of Los Angeles. The acquisition includes E & A sales facilities and good will, plus all tools, molds, dies, and designs. Don Roberts, veteran of several years in the plastic plug and fittings field, enters the newly-purchased organization as sales manager of E & A. Currently the company manufactures approximately 170 different plastic pipe fittings in Kralastic, Tenite II, and rigid polyvinyl chloride.

Lone Star Now Operating New Service Center

The Lone Star Gas Company is now operating from its new $1,300,000 Central Service Center in South Dallas. The structure, located on a 6-acre tract, replaces adjacent facilities established in 1923.

Gas distribution and maintenance operations as well as construction of gas mains and other street department work in South and East Dallas will be routed from the new building. In these sections Lone Star presently serves some 65,000 customers, representing about one-third of the total Dallas customers.

The Central Service Center is headquarters for all gas distribution operations in Dallas, and houses some 300 employees, including service department, warehouse, shop, street department and garage personnel, and a central office pool of clerical and supervisory personnel for each department. The service center building houses offices, warehouse, servicemen's training quarters, appliance testing laboratory, auditorium for employee meetings and a meter shop.



Southern Pipe Coating Opens New Plant in Atlanta

First major plant in the Southeast to apply high-quality pipe coating and wrapping for the gas industry has been opened by Southern Pipe Coating Company. The new firm occupies a 17-acre, $300,000 plant just completed in Doraville, and Atlanta surburb. Sales offices are at 795 Peachtree Street, N. E., Atlanta. J. C. "Chris" Matthews is sales manager. He was formerly with the Barrett Division of Allied Chemical and Dye Corporation.

Features of the plant are its completely automatic handling of pipe to secure coating and wrapping of the highest quality and the 17-acre facilities for storage of bare pipe. It is designed to process 12 miles of pipe a day, and eventually will be on a three-shift, 24-hour-a-day operating schedule.

Growing use of gas in residential areas and increasing pipeline activity due to the area's high rate of industrial expansion and new construction created the need for modern coating facilities in the Southeast.

Southern Pipe Coating's facilities include, in addition to the automatic handling equipment, a double "Holiday" detection test for locating defects in coating or wrapping. In this test, a charge of 12,000 to 16,000 v is applied around the coating. An alarm is sounded if the coating allows passage of this current. This test determines ability of coating to resist electrolytic action, the chief purpose of coating underground pipelines.

The large area set aside for pipe storage will enable customers to store all pipe before processing and then have it shipped directly to the job site immediately or shortly after coating. Deliveries will be made by rail with in-transit rates and the firm's own truck fleet anywhere in the Southeast.

Southern Pipe Coating's plant was designed and equipped in cooperation with Crutcher Rolfs-Cummings, Inc., leading manufacturer of machinery for coating and wrapping.

Corrosion Course Chairmen. At the Second Annual Appalachian Underground Corrosion Short Course held recently in Morgantown, West Virginia, eight members were elected to serve on the various programs. They were: General chairman, C. A. Erickson, Jr., Peoples Natural Gas Company; program chairman, R. M. Keller, Atlantic Pipe Line Company; co-chairman program committee, Charles Dey, Koppers Company; secretary-treasurer, R. E. Hanna, Jr., West Virginia University; chairman, exhibits committee, M. P. Ellis, Pittsburgh Coke & Chemical Company; co-chairman, exhibits committee; A. H. McClain, University of West Virginia; publications committee, George F. Orr, Hill-Hubbell & Company; and publicity committee, J. H. Royston, Royston Laboratories, Inc.

News About Associations

"Shoulders To The Wheel" Theme Highlights AGA Convention in St. Louis, October 7-9

A "Shoulders to the Wheel" luncheon stressing the importance of continued unity among all segments of the gas industry will highlight the thirty-ninth annual American Gas Association convention October 7 through 9 in St. Louis. More than 4000 representatives of gas utility, pipeline, and manufacturing companies will attend the three-day sessions in Kiel Auditorium.

Four outstanding gas industry executives will be presented at the luncheon by C. H. Zachry, AGA president and president of the Southern Union Gas Company.

C. H. Murphy Jr., president of Murphy Corporation, El Dorado, Arkansas, will discuss industry unity from the standpoint of the producer; Paul Kayser, president of El Paso Natural Gas Company, will speak for the transmission segment of the industry; Marvin Chandler, president of Northern Illinois Gas Company, will represent the distribution field, and Stanley H. Hobson, president of the George D. Roper Corporation, will present the viewpoint of the appliance manufacturer.

General Session Speakers

Prominent general session speakers will include James F. Oates Jr., president and chief executive officer of the Equitable Life Assurance Society, and James F. Healy, associate professor of industrial relations at Harvard University's Graduate School of Business Administration. Oates will address the opening general session October 7 and Healy will speak the following morning.

Two other major gas industry associations will be represented at other general sessions. Julius Klein, president of the Gas Appliance Manufacturers Association and president of Caloric Appliance Corporation, will speak Tuesday morning. Wednesday's general session will present J. J. Hedrick, president of the Independent Natural Gas Association of America and president of the Peoples Gas Light and Coke Company.

Other general session highlights will include introduction of Mrs. America of 1958 (Mrs. Linwood Findley of Arlington, Virginia) and Miss Julia Meade, the gas industry's television hostess on "Playhouse 90"; presentation of the industry's Distinguished Service Award, and election of officers.

Two New Awards

Nine coveted achievement awards will be presented by President Zachry at section meetings during the three-day convention. Two awards will be made for the first time — *Public Relations Achievement Award* to the member company with the outstanding public relations project during the past year, and the *Industrial and Commercial Achievement Award* for the outstanding individual contribution to the promotion of the industrial and commercial use of gas.

Other awards to be made include the Distinguished Service Award, the Beal Medal for the best technical paper presented at an AGA meeting during the year; the Distribution Achievement Award; the Operating Section Award of Merit; the Order of Accounting Merit; the Safety Achievement Award, and the Home Service Achievement Award.

Section Meetings

All five sections of the association will hold meetings during the first two days. Operating, accounting, and residential gas sections will convene Monday.

Operating. Grove Lawrence, Southern California Gas Company, and chairman of the operating section, will preside. Speakers will include Major General L. E. Cotulla, Staff Director, Petroleum Logistics Division, U. S. Department of Defense; Mark V. Burlingame, Natural Gas Pipeline Company of America, and L. E. Heckman, Columbia Gas System Service Corporation.

Accounting. Austin W. Merchant, Michigan Consolidated Gas Company, will preside at the accounting section meeting. Among the speakers will be Claude F. Wahli, Knoxville Utilities Board; Erwin K. Taylor, Personnel Research and Development Corporation; J. H. Purdy, Baltimore Gas and Electric Company, and Clifford H. Domke, of McKone, Badgley, Domke and Kline.

Residential Gas. Miss Julia Meade and Mrs. America will be guests of the residential gas section meeting presided over by W. D. Williams, New Jersey Natural Gas Company. Speakers will include Sol Weill, George D. Roper Corporation, and John H. Brinker, A. O. Smith Corporation.

Industrial and Commercial. On Tuesday, the residential gas section will combine forces with the industrial and commercial gas section at a luncheon in the Sheraton Jefferson Hotel to hear J. Theodore Wolfe, president of Baltimore Gas and Electric Company, discuss all-year gas air conditioning. Wolfe is chairman of the gas industry development committee. Presiding at the luncheon will be J. Robert Delaney, Cincinnati Gas and Electric Company, and W. D. Williams, New Jersey Natural Gas Company. They are the chairmen of the Industrial and Commercial Gas Section and the Residential Gas Section, respectively.

This luncheon will be followed by a session of the industrial and commercial gas section at which the speakers will be Ralph T. McElvenny, American Natural Gas Company; John S. McElwain, East Ohio Gas Company, and F. T. Brooks, Philadelphia Electric Company.

Home Service. The home service committee plans a busy schedule for Tuesday, starting with breakfast at which President Zachry and AGA Managing Director C. S. Stackpole will speak, along with Miss Bonnie Dewes, D'Arcy Advertising Company. Participating in a home service roundtable will be Mrs. Mary Louise Bohn, Laclede Gas Company, Miss Margaret B. Doughty, Dow Chemical Company, and Miss Mildred Clark, Oklahoma Natural Gas Company. Heading the AGA home service committee is Miss Marjorie T. Chandler, Consumers Gas Company of Toronto, Canada.

General Management. On Tuesday, the general management section will hear a prominent speaker, whose name will be announced shortly, at a luncheon in Hotel Coronado. Leslie A. Brandt, chairman of the section and vice president of Peoples Gas Light and Coke Company, will preside.

Speakers at Tuesday's operating section meeting at 2 p.m. in Kiel Auditorium, with Grove Lawrence presiding, will include Joseph A. Keller, of the Washington, D. C., law firm of Dow, Lohnes and Albertson; Paul W. Kraemer, Minneapolis Gas Company, and J. C. Collins Sr., New Orleans Public Service Corporation.

The accounting section, also meeting in Kiel Auditorium at 2 p.m., will feature an address by Prof. Robert T. Livingston, Columbia University, and a panel discussion. Presiding will be James F. Daly, Long Island Lighting Company.

Entertainment

Entertainment plans include the President's Reception and Dance Monday; a ladies' luncheon and style show Tuesday; a variety show Tuesday; and

a tour of the famous Shaw's Gardens Monday afternoon. R. J. Vandagriff, Laclede Gas Company, is chairman of the convention entertainment committee. Other members are Fred D. Bradley, Southern Union Gas Company, Thomas H. Evans, Equitable Gas Company, Raymond W. Fenton, Peoples Gas Light and Coke Company, M. J. Harper, Rockwell Manufacturing Company; John W. Holzman, Magic Chef, Inc.; J. N. Shrader, Southern California Gas Company; William H. Otto, Laclede Gas Company; Lester E. Reynolds, Connecticut Light and Power Company, and Richard F. Mulligan, committee secretary, American Gas Association.

Members of Robert W. Otto's general convention committee include R. R. Blackburn, Southern California Gas Company; Edward G. Boyer, Philadelphia Electric Company; Cecil M. Dunn, Magic Chef, Inc.; Nathan H. Gellert Jr., Spokane Natural Gas Company; T. H. Kendall, Southern Jersey Gas Company; Howard B. Noyes, Washington Gas Light Company; H. Vinton Potter, Oklahoma Natural Gas Company, Robb Quinby, Brooklyn Union Gas Company; James A. Rodgers, White-Rodgers Electric Company; Charles G. Simpson, Philadelphia Gas Works; R. J. Vandagriff, Laclede Gas Company, and Harold S. Walker Jr., secretary, AGA.

SGA INDUSTRIAL SALES ROUND TABLE — E. A. "Gene" Brown of the Union Gas System, Inc., sponsored the SGA's Industrial Sales Roundtable Conference held July 18 in Atlanta, Georgia. Twenty-two representatives from 13 different companies attended. Discussion topics were air conditioning; regulating high-load demand; large volume heating; comparison of efficiencies of competitive fuels; methods of economically holding temperature in hosiery drying tanks; process of heat pumps in various localities and method of meeting this competition; prospects of incinerator sales; use of natural gas for cutting torches; methods of boiler firing to accommodate standby fuel; and use of natural gas in chemical industry.

GAMA FIVE FIRMS JOIN GAMA GROUP. Five manufacturing companies — one with headquarters in Argentina — have become members of the Gas Appliance Manufacturers Association. They are: CATITA, S. A., Buenos Aires, manufacturer of automatic gas ranges, gas water heaters, and gas heating units; Oakland Foundry Company, manufacturer of automatic gas ranges, direct heating equipment, and gas incinerators; Nu-Way Corporation, maker of gas conversion burners; American Air Filter Company's Herman Nelson Division, producer of gas furnaces, and National Heating & Cooling Manufacturing Corporation, manufacturer of gas boilers, furnaces, and water heaters.

Accident Prevention Conference is scheduled for St. Louis September 17-18. The safety workshop session featuring seven simultaneous group meetings to discuss the most common accident problems in the gas utility and pipeline industry will be a highlight of the AGA's ninth annual accident prevention conference. Charles Williams, the Gas Service Company, will head the workshop.

AGA Air Conditioning Program Accelerated. A 12-man Air Conditioning Promotion Committee to stimulate the promotion and sale of residential, commercial, and industrial gas air conditioning equipment has been formed by AGA to accelerate development and marketing programs in the fast-growing air conditioning field. W. W. Selzer, director of business promotion for the Columbia Gas System Service Corporation, will serve as chairman of the special PAR task force group. Committee members are: W. D. Williams, vice president sales, New Jersey Natural Gas Company; J. Robert Delaney, manager of gas sales, Cincinnati Gas and Electric Co.; B. C. Adams Jr., vice president and general manager, The Gas Service Co.; Harold F. Carr, manager, residential sales promotion, Baltimore Gas & Electric Co.; H. William Doering, heating and air conditioning manager, Springfield Gas Light Co.; E. L. Henderson, vice president, United Gas Corp.; David J. Kerr, director of business development, Southern Union Gas Co.; John S. McElwain, sales manager, East Ohio Gas Co.; Frank N. Seitz, vice president sales, Southern Counties Gas Co.; G. J. Tankersley, executive vice president, Gas Light Co. of Columbus, and R. J. Vandagriff, vice president sales, Laclede Gas Co.

Lancaster METER PARTS CO.

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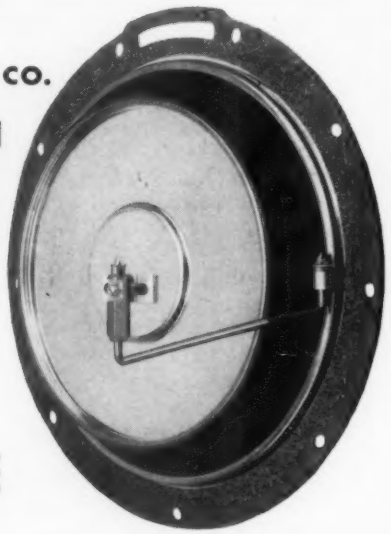
WITH SUCCESSFUL SYNTHETIC DIAPHRAGMS for 1-A SPRAGUE GAS METERS



Lancaster S-700-L Synthetic Diaphragm

Years of research and testing have produced a material and diaphragm construction that withstands excessive flexing — a vital necessity for Sprague or Ironclad meters.

Lancaster Synthetic diaphragms have no cloth lining to cause restrictions, leaks or breakdowns.

No other material tested approaches the flexibility and low differential of the Lancaster S-700-L Synthetic diaphragm. The adjustable carrier wire and special center bracket are attached to the diaphragm—for the first time it is possible to center the synthetic diaphragm perfectly and adjust it to thick or thin meter cases.

Change to the Lancaster S-700-L now for your 1-A Sprague Meters.

S-700-L Synthetic Diaphragm comes complete with carrier wire and gasket attached. Can be furnished without gaskets cemented to flange.

Not recommended for manufactured gas

Lancaster METER PARTS CO.

Manufacturers of Quality Parts for Gas Meters

POST OFFICE BOX 378 LANCASTER, OHIO

Coming Events

IN THE GAS UTILITY INDUSTRY

September

6 New Jersey Gas Association, annual meeting, Spring Lake, New Jersey.

9-10 INGAA annual membership meeting, Shamrock-Hilton Hotel, Houston, Texas.

9-13 **AGA** Industrial Gas School, Hotel Penn-Sheraton, Pittsburgh, Pennsylvania.

10 New England Gas Association safety conference, Sheraton-Plaza, Boston, Massachusetts.

10-11 Mid-West Gas Association, gas school and conference, Iowa State College, Ames, Iowa.

11-13 Natural Petroleum Association, annual meeting, Traymore Hotel, Atlantic City, New Jersey.

11-15 National Hotel Exposition, Coliseum, New York. (AGA will exhibit.)

12 NEGA safety conference, Hotel Statler, Boston, Massachusetts.

12-13 AGA task group for air conditioning, AGA headquarters, New York, New York.

13-14 Maryland Utilities Association, 33rd annual fall conference, The Cavalier Hotel, Virginia Beach, Virginia.

16 Rocky Mountain Gas Association, annual banquet, American Legion Hall, Denver, Colorado.

16-20 Motor Vehicle Maintenance, University of Oklahoma, Lockett Hotel, Norman, Oklahoma.

17-18 AGA accident prevention conference, Sheraton-Jefferson Hotel, St. Louis, Missouri.

18 AGA LP Gas Utility Code committee, AGA headquarters, New York, New York.

18-20 Southeastern Gas Association convention, Robert E. Lee Hotel, Winston Salem, North Carolina.

20 Oklahoma Utilities Association, gas division one day conference, Skirvin Hotel, Oklahoma City, Oklahoma.

20-21 Public Utilities Association of the Virginias, annual meeting, Greenbrier Hotel, White Sulphur Springs, West Virginia.

23-25 ASME, fall meeting, Statler Hotel, Hartford, Connecticut.

October

1- 4 NACE, south central regional meeting, Municipal Auditorium, Oklahoma City, Oklahoma.

7- 9 AGA annual convention, Kiel Auditorium, St. Louis, Missouri.

10-12 ASME Fuels-AIME conference, Chateau Frontenac, Quebec, Canada.

16-18 Wisconsin Utilities Association, annual convention, Schroeder Hotel, Milwaukee, Wisconsin.

21-25 National Safety Council, Conrad Hilton Hotel, Chicago, Illinois.

23 NEGA street department supervisors group, Hotel Bancroft, Worcester, Massachusetts.

November

4- 8 National Metal Exposition, Chicago, Illinois. (AGA will exhibit.)

6 NEGA Operating Division, Hotel Statler, Hartford, Connecticut.

THOUSANDS OF MILES OF LONE STAR LINE PIPE

BEST BUY!

Lone Star electric weld line pipe has uniform wall thickness in every joint. Quick, accurate field-joint line-up and outstanding weldability . . . plus easy-to-bend characteristics . . . mean faster construction schedules. Plus value: year-after-year of trouble-free service.

Lone Star API line pipe, casing and tubing . . . made in Lone Star's ultra-modern plant . . . are quality-controlled from mining of the ore through the fine, finished products in the pipe mills. Lone Star is a completely integrated operation . . . dedicated to serving the oil and gas industries.

Neighbor, wherever you are, specify Lone Star and we both get a good deal!

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Things to write for . . .

Bulletins, brochures, books of interest to gas utility industry people

Rockwell Semi-Steel Valves. A completely revised 43-page bulletin (V-203, Rev. 1) covers entire Rockwell-Nordstrom semi-steel valve line. Superseding the 35-page earlier edition, the new bulletin has two full pages of photos, drawings, and detailed description of Rockwell-Nordstrom lubricants and lubricating methods; and large cutaway photos showing in detail the working parts of four principal types of semi-steel valves — two-bolt cover, screwed-gland, bolted-gland, and multi-port types. *Meter and Valve Division, Rockwell Manufacturing Company.*

CIRCLE (20) ON THE REPLY CARD

LP-Gas Storage Standard. An 80-page 1957 edition of the "Standard for Storage and Handling of Liquefied Petroleum Gases" has just been released. Provisions for the safe storage and handling of LP-gases are detailed in this revised standard. Principal changes in the 1957 edition are inclusion of a new term "container assembly," LP-gas refrigerated storage systems are no longer covered, 1956 ASME Code is recognized, ICC containers permanently mounted on industrial trucks are used, and precautions necessary when parking a loaded trailer or semi-trailer are noted. *National Fire Protection Association.*

CIRCLE (21) ON THE REPLY CARD

Regulator Repair. Complete operation instructions as well as time and labor saving suggestions in testing and repairing regulators and meters are described in a new bulletin on Universal Regulator Repair and Test Stand and Meter Repair Racks. Universal methods, explained in the bulletin, increase substantially repair and maintenance shop output of these gas service items. *Universal Controls Corporation.*

CIRCLE (22) ON THE REPLY CARD

Gas Appliance Venting Survey. Second part of Field Survey of Gas Appliance Venting Conditions analyzes flow conditions which exist in an operating vent system with no significant influence of wind on the outside terminal of the vent system. This data coupled with the data on maximum values of draft variables described in Report No. 1243, furnish information on effects of atmospheric wind conditions on vent operation. *Research Report No. 1267, AGA Laboratories.*

CIRCLE (23) ON THE REPLY CARD

New Thermostat for Smaller Gas Appliances. Sensitive, self-contained thermostat for controlling the temperature of chicken brooders and other gas appliances is described in a 4-page two-color bulletin recently published by Robertshaw-Fulton. Model "DK" controls temperature from 70 to 120 F. Unique twin diaphragm construction gives unit unusualy quick response to temperature changes. Installation and cut-away diagrams are included. Unit has hourly capacity of 50,900 Btu for manufactured gas, 75,300 for natural gas, and 210,000 for LP-Gas. *Robertshaw-Fulton Controls Company.*

CIRCLE (24) ON THE REPLY CARD

Wheel Ditcher folder. Attractive, 8-page, two-color folder describes Barber-Greene's new model 774 wheel-type ditcher. Designed for contractors, pipeliners, and utilities using wheel ditchers, Model 774 also complements B-G's already well-known line of vertical boom and ladder type machines. Model features include unique flexible connection between chassis and digging wheel; floating differential that offers constant gear tooth contact on both sides of the wheel and constant tension and chain alignment to minimize chain wear due to "flop" and misalignment; hydraulic spoil conveyor drive and hydraulic wheel hoist; "Hydra-crown," finger tip control of wide range of forward crowding speeds, and simplified crawler design. *Barber-Greene.*

CIRCLE (25) ON THE REPLY CARD

Manual to lengthen life of commercial kitchen equipment and keep it in efficient operating condition is now available from Gas Consumers Service. "Care That Counts," a new 16-page manual designed for food service operators, gives simple, easy-to-follow instruction on cleaning and caring for commercial cooking equipment, and information on how to determine the basic hot water needs for individual restaurants. *Gas Consumers Service.*

CIRCLE (26) ON THE REPLY CARD

Power Supply for Two-Way Radio Units. New bulletin on General Electric's Transistorized Power Supply for two-way radio units is now available. Transistor power can be used without obsoleting existing radio equipment and can make possible system modernization without expensive maintenance. Cost of installing new device is written off in savings from lowered maintenance expenses resulting from fewer vibrator replacements and service calls. *General Electric Company.*

CIRCLE (27) ON THE REPLY CARD

Research on Burner Design. Design and application of Impingement Target Burners, an AGA research bulletin, analyzes effects of various burner design factors on the operating characteristics of burners with flame spreaders. Application of this type of burner, which eliminates the conventional air-shutter and mixing tube, and consists of an orifice and impingement target, is demonstrated in a water heater, a range top section, and a central heating furnace. *Research Bulletin 75, AGA Laboratories.*

CIRCLE (28) ON THE REPLY CARD

Lubricated Plug Valve Lubricants. New 12-page illustrated lubricating manual for Walworth lubricated plug valves is now available. New manual includes a two-page chart that lists in alphabetical order more than 560 flow materials that lubricated plug valves service, and opposite each is its recommended lubricant number. Service range of each lubricant is presented in another chart along with a description of the lubricant and its temperature range. *Walworth Company.*

CIRCLE (29) ON THE REPLY CARD

Tape Wrapping Machine. New four-page illustrated brochure giving specifications and construction details on two power operated tape wrapping machines and the three manually operated models of the Plicoflex company, is now available. Lightweight, compact and durable, the Plicoflex "Speedmaster" Tape Wrapping Machines provide precise controlled performance necessary to the application of tape on pipelines. Special features include ironing action of wide wheels which insure the best possible tape bond, fully controllable tape overlap adjustment while in motion, and completely adjustable tension tape heads. *Plicoflex, Inc.*

CIRCLE (30) ON THE REPLY CARD

Meter Accessories. Five new bulletins on positive displacement meter accessories have just been completed and are available from American Meter Company. Literature includes Bulletin 200, "Base Volume Index"; Bulletin 201, "Base Pressure Index"; Bulletin 202, "Volume and Pressure Gage"; Bulletin 203, "Critical Flow Prover"; Bulletin 204, "Low Pressure Flow Prover." *American Meter Company, Inc.*

CIRCLE (31) ON THE REPLY CARD

Plastic Pipewraps. Plastic pressure-sensitive tapes for pipewrapping and controlling corrosion are described in a new four-page bulletin. The two-color bulletin furnishes specifications on both vinyl and polyethylene pressure-sensitive tapes for either hand or machine wrapping of pipelines and points out their applications. Handy chart gives coverage for pipe sizes from ½ to 36-in. Also included are data on vinyl tapes for electrical applications. *Rubber & Plastics Compound Company, Inc.*

CIRCLE (32) ON THE REPLY CARD

Combination AC, DC Welders. New 4-page two-color booklet describing the Idealarc combination a-c, d-c welder is now available. Unit has both a-c and d-c welding current available at the flick of a switch, and gives a choice of soft or forceful arc on either current. Photographs and cutaway models of unit are included in booklet. General construction features are described and a specification table included. Features of the unit are arc stabilizer, single phase operation, reconnectable from 220 to 440 volts, protected against burn-out and no-voltage, and hood draft ventilation. *The Lincoln Electric Company.*

CIRCLE (33) ON THE REPLY CARD

Gas Utility BOOKSHELF

Construction Planning, Equipment, and Methods, *by R. L. Peurifoy, published by McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 36, New York. Pages, 533. Price, $8.50.*

Thorough, sound and practical guide shows how to plan and carry out a construction project with the most satisfactory and economical results. Details are given on how to prepare preconstruction reports, divide projects into work stages, expedite jobs by setting up operation plans, move in, order materials, and schedule laborers. Engineering fundamentals related to excavating, hauling, and placing earth are described. Covers selection of suitable equipment and emphasizes factors to consider. There are 385 illustrations and tables throughout the book.

Contracts, Specifications, and Engineering Relations, *by Daniel W. Mead, Harold W. Mead, and Joseph R. Akerman, published by McGraw-Hill Book Company, Inc. 330 West 42nd Street, New York 36, New York. Pages, 427. Price, $7.00.*

This book provides a firm foundation for working with contracts and specifications by explaining engineer's rights, responsibilities, and relations to his associates. Role of engineer as an arbiter, agent, and participant in legal proceedings is clearly explained. Construction by direct employment and by contract, types of cost-plus provisions; bidding procedures, advertising, and letting of contracts, and many other facts are treated specifically from the engineer's viewpoint. Additionally, complete specifications for a large engineering job are presented.

It is a source of practices, style, and safeguards for practically every type of engineering contract and specification.

The Heating Ventilating and Air Conditioning Guide 1957, *35th edition, published by the American Society of Heating and Air-Conditioning Engineers, 62 Worth Street, New York 13, New York. Pages, 1250. Price, $12.00.*

Enlarged Technical Data Section has over 1250 pages representing an increase of more than 70 pages to accommodate new and revised information. Catalog Data Section has also been expanded to 520 pages and includes reference material of 337 manufacturers. Two completely revised and rewritten chapters of especially wide-spread interest are Chapter 9 — Heat Transmission Co-efficients of Building Materials, and Chapter 44 — Control of the Industrial Environment. Chapter 9 has a new set of U-value tables covering many more constructions than in previous editions. Chapter 44 describes a new method for establishing standards for indicating heat stress, and a new chart for combining effects of various factors into a single heat stress index. Other changes are a new presentation for design of hot water heating systems, step-by-step procedure for designing ceiling and floor heating panels, simplified design data for forced warm air systems, greater description, illustrations and design of various types of steam heating systems, enlarged discussion of corrosion causes and prevention, and a reference list of existing codes and standards.

DIGS STRAIGHT

DIGS CLOSE

DIGS FAST

Etowah Construction Company uses its Cleveland 95's compactness and shiftable conveyor to advantage on this utilities job in Franklin, Tennessee.

The Cleveland 95 "Baby Digger"— built by the Pioneers of the Modern Trencher, originators of *every* important trencher design feature—makes money for its owners because it . . .

- ***fits more jobs***—digs to 5½′ deep x 24″ wide.
- ***digs all soils***—full-size engine, over 30 graduated power and speed combinations.
- ***digs faster***—more bucket capacity, more wheel-and-crawler combinations.
- ***saves property damage***—full crawlers, easy on lawns and sidewalks.
- ***lasts longer***—quality construction and materials mean longer life—it's in the records.

THE CLEVELAND TRENCHER CO.

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Good Everywhere

JOSLYN
COMPRESSION COUPLINGS*

JOSLYN—FOR 55 YEARS LEADING SUPPLIER OF CONSTRUCTION MATERIALS TO THE ELECTRICAL POWER AND COMMUNICATION UTILITIES

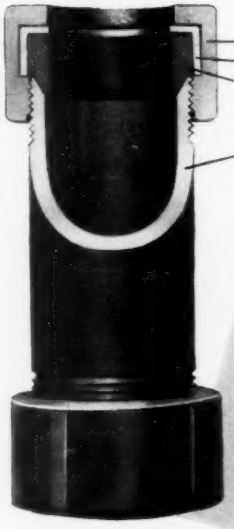
Available from stock at all JOSLYN Warehouses

THREADLESS PIPE JOINTS FOR ANY LIQUID OR GAS—WATER, OIL, GAS, CHEMICALS, ETC.

Easily Installed—Simple proven principle eliminates thread cutting and exact pipe fitting—just stab pipe ends into factory-assembled coupling and tighten compression nuts.

Permanently Leak-Proof—Exclusive design insures compression seal of gasket without friction or seizure—use of fine, straight threads produces high compression sealing force at gasket surfaces.

Economical, too—Overall simplicity means low first cost—ease of installation and permanence means overall economy.



1-Piece Nut Assembly
A—Malleable Iron Compression Nut
B—Expanded Steel Gasket Retainer
C—Gasket
Body
D—Steel Sleeve

Also available in other materials for special applications *Patent Pending

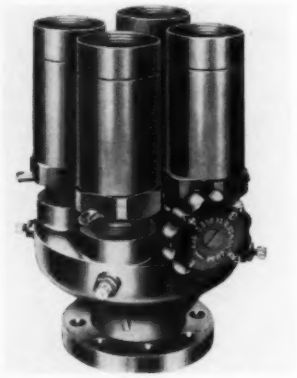
JOSLYN MFG. AND SUPPLY CO. **WM. E. PRATT FOUNDRY DIVISION**

155 North Wacker Drive • Chicago 6, Illinois

NEW EQUIPMENT
OF THE GAS UTILITY INDUSTRY

For more information on items described here in brief, use the handy reply card and circle the corresponding numbers

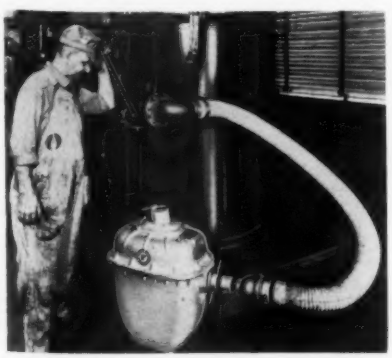
Valve Manifolds Approved. Models 7564 and 7565 Four Port Relief Valve Manifolds, and 3149B and 3149G Safety Relief Valves, manufactured by Bastian-Blessing Company, have been approved by Factory Mutual Laboratories. This is the first time a relief valve manifold capable of protecting a 30,000 gal container has



been listed by Underwriters' Laboratories, Inc. and approved by Factory Mutual Laboratories. Exclusive on the RegO Four Port Manifold is the feature that permits removal of safety relief valves while the container is under pressure; thus making possible easy and convenient testing or replacement of safety relief valves without removing the container from service. Manifold is available in two flange sizes — 7564 for use with 3-in. 300 lb flat face flange modified to a 4-in. ID and the 7565 for use with a 4-in. 300 lb raised flange. *The Bastian-Blessing Company.*

CIRCLE (75) ON THE REPLY CARD

Quick Connectors for Gas Meters. Designed to cut testing time approximately two-thirds, a range of quick connectors for use with provers when testing gas



meters are now available from Moeller Manufacturing Company. "Turn-Tite" adjustible quick connectors have been developed by Moeller engineers in cooperation with the Milwaukee Gas Light Company. These connectors eliminate elaborate run of pipes, use of large wrenches, and provides ease in handling, and saves time and labor. Available in three sizes, for 2, 3, and 4 in. openings, connectors can be used either as single units or in combination with each other. *Moeller Manufacturing Company.*

CIRCLE (76) ON THE REPLY CARD

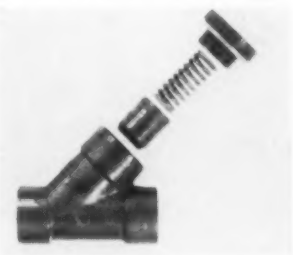
New Odorants. Two non-mercaptan odorants, GASNIFF and MacSNIFF, have been added to the line of CAPTAN natural gas warning agents by Natural Gas Odorizing, Inc. GASNIFF features an extremely flat boiling range that makes it adaptable to all types of odorizing equipment; has a typically "gassy" odor, and is used in normal concentrations from 0.5 to 1.0 lb per MMcf of gas. MacSNIFF has a wider boiling range and is designed for liquid injection equipment. Its unique odor makes it especially suitable where refinery or other odors may be confused with more typical gas odorants. *Natural Gas Odorizing, Inc.*

CIRCLE (77) ON THE REPLY CARD

Large-Size Gas Vent Pipe. Complete line of double-wall gas-vent pipe in large sizes has been made available by Dura-Vent. Included are four sizes of the metal-wall, air-insulated round pipe and fittings — 7, 8, 10, and 12 inches in inside diameter. All units feature single-piece construction of the outer wall. This wall is of heavy-gage galvanized iron. *Dura-Vent.*

CIRCLE (78) ON THE REPLY CARD

First All-Plastic Lift Check Valve. Walworth Company has introduced a new valve whose body and components are made of normal impact rigid polyvinyl chloride to provide high corrosion re-



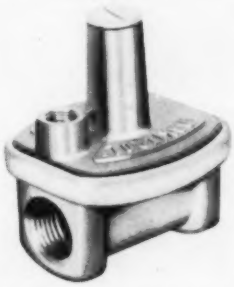
sistance to corrosive flow material. A durable PVC spring positions the disc to assure quick, complete shutoff. New PVC check valve operates successfully at pressures up to 150 psi at 75 F. Complete shutoff was obtained with the valve during and after 2 million continuous cycles under 125 lb of air and 50 lb of water. Light in weight, the check valve is easily handled and installed, and is available for ½ through 2-in. pipe and comes in either threaded, solvent-weld, socket-type or flanged ends. *Walworth Company.*

CIRCLE (79) ON THE REPLY CARD

Differential Pressure Controller. New controller features the Barton Model 199 Rupture-proof bellows unit and is furnished in differential pressure ranges from 0-20-in. wc to 0-50 psi with static pressure ratings up to 6000 psi. Variety of housing materials are available including aluminum, steel, alloy steel, and stainless steel. Standard control actions include on-off, differential gap and proportional. Proportional plus reset or proportional plus rate are optional. Model 237 utilizes supply pressure of 20 psi and has output of 3-15 psi with a 6-30 psi optional. *Barton Instrument Corporation.*

CIRCLE (80) ON THE REPLY CARD

Appliance Regulator for Confined Mounting Areas. New appliance gas regulator for mainburner and pilot loads has been designed to fit into small areas. Designated the RV-30, unit is the smallest regulator of comparable capacity, is of tamper-proof construction (hermetic type) and



cannot be field disassembled. Model maintains accurate regulation at the extremely low flow rates encountered with tiny pilot flames because of the precision synthetic rubber valve seat. Even with dirt or other impurities in the gas line, unit performs accurately at low flow rates because resilient valve seat conforms and keeps its proper shape. Oval shape of the new regulator compresses width dimensions without lowering capacity. Unit is ideal for use on modern gas appliances designed with restricted vestibules. Performs beyond tolerances of AGA requirements for mainburner and pilot loads even on hypodermic-type pilots. Where required, unit can also be used just for mainburner loads as it will perform an inlet pressure as high as 1 psi. Available in pipe sizes of ⅜ by ⅜ in., ½ by ⅜ in., and ½ by ½ in. *Maxitrol Company.*

CIRCLE (81) ON THE REPLY CARD

Glass Fabric-Base Pipe Joint Wrap. New stronger glass fabric-base pipe joint wrap is available from L-O-F Glass Fibers Company. Known as "Duratape," wrap increases tensile strength in both longitudinal and horizontal directions. Consisting of a woven glass fabric base, heavily coated on each side with either a coal tar (Type W-711) or asphalt covering (Type W-712), the wrap provides tensile strength of 120 lb per lineal inch for the width dimension. This is an increase of 20 times its former rating. Strength along the length of the product has been doubled to 130 lb per lineal inch. Wrap is highly resistant to electrolytic currents and is designed for hand wrapping of field joints and fittings on underground pipelines. *L-O-F Glass Fibers Company.*

CIRCLE (82) ON THE REPLY CARD

• *Leakage Control Surveys by*

HEATH

are important SAFETY factors in distribution of natural gas to the Pacific Northwest . . .

"C" Type Surveys are the *safety* controls before, during and after actual conversion.

"V" Type Vegetation and Soil Surveys cover residential and rural areas.

"W" Type Surveys provide complete leakage control for downtown areas, including street and building inspections.

"O" Type Overall Surveys combine the "V" and "W" Types to safeguard entire systems.

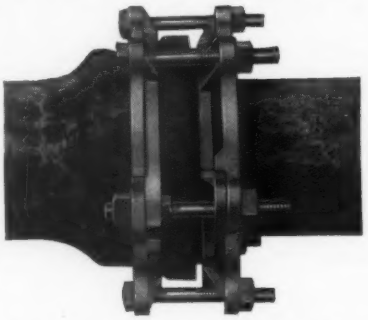
Over 650 gas companies in the U.S.A. and Canada use Heath Leakage Control Surveys to safeguard lives and property and to reduce unaccounted-for gas losses.

Write or wire collect for complete information about Health Surveys to meet your requirements.

HEATH
Survey Consultants, Inc.
573 WASHINGTON STREET, WELLESLEY 81, MASS.

New Equipment

Bell Joint Clamps. Complete line of bell joint clamps in sizes from 4 to 30-in. is now being manufactured and stocked in 27 warehouses all over the country by the Joslyn Mfg. and Supply Co. Clamps consist of two segmental, malleable iron rings, a combination single ring gasket made of two hardnesses of rubber, and a set of clamping bolts. The soft rubber portion



of the gasket quickly seals off leaks in the bell and spigot joint; harder outer portion of gasket engaged by the spigot ring resists cold flow and holds the gasket under permanent pressure. With this design, joints can be made tight before bolts are fully drawn up, thus providing higher factors of safety. *Joslyn Mfg. and Supply Company.*

CIRCLE (83) ON THE REPLY CARD

Insulated Curb Box. To help combat corrosion problems, the Opelika Foundry Company has recently designed a cast iron service or curb box with the bell end cock housing made of butyrate plastic. Being non-metallic and inert by nature, the plastic housing eliminates galvanic or electrolytic corrosion. Curb cock and pipe line are completely insulated from the cast iron box. Where Buffalo type curb boxes are in use, the parts of the new Opelika box will interchange, making additional inventory unnecessary except for the bottom sections. *Opelika Foundry Company.*

CIRCLE (84) ON THE REPLY CARD

New Combination Gas Vent for Central Heating Units. Gas valve design incorporates a pressure regulator and safety pilot in a single, compact, and completely integrated unit. Designed and built by Detroit Controls, the V-600 provides the benefits of simple installation, dependability, and economy. It features safe lighting, and may be used with all gases. Unit is capable of handling up to 300,000 Btu per hour. *Detroit Controls Corporation.*

CIRCLE (85) ON THE REPLY CARD

Ultrasonic Testing Instrument. A completely portable, battery-operated ultrasonic thickness measuring unit has recently been perfected that locates areas of corrosion or wear on storage tanks, pipes, and other structures and products accessible from one side only. Utilizing an entirely new means for reading ultrasonic thickness measure, Sonizon SO-200 is fast, positive, and gives direct readings of thickness. Unit is carried by means of shoulder straps, with read-out dial facing upward for convenient reading. Battery case, joined to the main unit by a connecting cable, is also carried by shoulder straps. Unit requires no warm-up time, measures with an accuracy of 3 percent on thickness between .027-in. and 4-in. and works on practically all materials which can transmit ultrasonic sound, such as most metals, glass, hard insulators, etc. *Magnaflux Corporation.*

CIRCLE (86) ON THE REPLY CARD

Super Silent Solenoid Gas Valve. A new General Controls unit combines the simplicity of a solenoid valve with the silence of a diaphragm valve by sealing all working parts in a liquid filled, hermetically sealed head. Designated the K-3H, this new valve reduces installation costs by eliminating a bleed line and provides long, service-free life through permanently sealed operating components. *General Controls Company.*

CIRCLE (87) ON THE REPLY CARD

"Private Line" Radio. Motorola has announced a 450-470 mc PRIVATE LINE radio that literally "shuts out" nuisance noise and unwanted messages from other users operating on the same two-way radio channel. This new radio transmits a continuous, sub-audible tone along with every voice transmission. Receivers "open up" for listening only when the proper tone is transmitted, so that reception is cut out except when transmissions are being originated by the dispatcher or other mobiles operating in the same system. Because the operator hears only messages transmitted by radios in his system, operator fatigue is eliminated and the chance of missing or misunderstanding messages is minimized by PRIVATE LINE radio. *Motorola, Inc.*

CIRCLE (88) ON THE REPLY CARD

Peak Shavings

. . . . with laughing gas

Wife to husband at party: "Melvin, don't you take another drink. Your face is already getting blurred."

Trouble is usually produced by those who produce nothing else.

Then there was the dumb coed who soaked her strapless evening gown in coffee so it would stay up all night.

POCKETFUL OF WRY — Definition: Nepotism — putting on heirs . . . Hotel sign: "Don't smoke in bed. The ashes that fall to the floor may be your own." . . . Sign on roadside inn —"All Nite Nite Spot, Open All Day."

The "Walk" and "Don't Walk" neon signs beneath signal lights are fairly well understood in most cities, but in Cincinnati it was reported that an elderly woman there was all mixed up about them. Blithely crossing a street in the face of a "Don't Walk" warning, she was met by a policeman at the far curb.

"Lady," he said, "do you realize you walked against that sign?"

"What sign?" she asked.

"That 'Don't Walk' sign."

"Oh, **that,**" she said. "I thought that was put up by the bus company."

There is really only one thing wrong with the younger generation — a lot of us don't belong to it anymore.

Surely you're not going to let that redhead steal your boy friend?"

"I'll dye first!"

Boss to secretary: "Make about 20 copies of that Doris, so we'll run across one when we need it."

Dear Sir: Please send me my money back. After taking six cans of your corn sirup, my feet ain't any better than they was.

HOW TO TURN ADVERSITY TO GOOD USE: Years ago P. M. Mutt suffered embarassment about his anme; today, however, he's a home builder and in front of each house he builds he puts this sign: "Another Hut by Mutt."

A budget, we have found, is a planned method of worrying.

When asked to furnish his school affiliations, a New England job applicant paused briefly, then write, "Korea, Clash of 1952."

Can that new girl in accounting add?

No, but you should see her distract.

Here's to the happy bounding flea
You cannot tell the he from she.
The sexes look alike, you see;
But she can tell and so can he!

Junior was being chided for his low grades. Little Robert, who lived nearby, was held up as an example. "Robert doesn't get D's and C's, does he? asked the father.

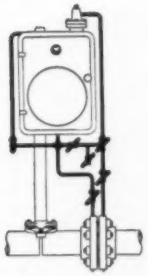
"No," Junior admitted. "But he's different. He has very bright parents."

A street sign reads "School — don't kill a child." Beneath was a childish scrawl: "Wait for a teacher."

For corrosive field service...

AMERICAN®

Needle Valves



Teflon-packed, forged steel American® Needle Valves stand up in the toughest meter manifold jobs and other corrosive field services without gland leaks. Stainless or carbon steel precision machined valve bodies are specially suited for welding. Stainless steel centerless-ground valve stems are designed so that the valve can be repacked under pressure.

Standard valves design rated for pressures to 5,000 psi at 70°F. For pressures to 10,000 psi, upon request, valves are hydrostatically tested and individually inspected. Valves are furnished with graphite-impregnated asbestos packing for temperatures above 450°F.

Angle or straight patterns —screwed or union bonnets.

Consult your American Meter representative for full details.

AMERICAN® METER COMPANY

INCORPORATED ESTABLISHED 1836

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SUPPLIERS TO THE GAS INDUSTRY for Ironcase, Tinned Steelcase, Aluminumcase and Welded Steelcase Meters • American-Westcott Orifice Meters Instruments • Reliance Regulators • Apparatus • Valves

step up
water heater
sales and
dependability!

ROBERTSHAW-GRAYSON CONTROLS

You can step up your water heater sales volume at every rung of the ladder from low priced leaders to higher priced, profit-packed, prestige models.

Start with the economy and dependability of the smart-looking UNITROL 110...step up to the more attractive UNITROL 200 for medium-priced water heaters... and then to the top for "the modern look" of the new UNITROL 400!

A point to remember—when you sell a prestige water heater, overall appearance and dependability *must* justify the extra cost! Start with the control!

Specify Robertshaw-Grayson controls from the bottom to the top!

Robertshaw-Fulton CONTROLS COMPANY

GRAYSON CONTROLS DIVISION • LONG BEACH, CALIFORNIA

UNITROL 400
"The modern look" .. a prestige control for prestige water heaters where you must justify a higher price to the customer. Features a greater capacity, 99,000 (natural gas) BTU per hour!

UNITROL 200
Four controls in one ... smart appearance enables you to trade up from the price leader class to a higher profit medium-priced bracket.

UNITROL 110
Pilot gas cock, main gas cock, thermo-magnetic, 100% automatic shut off of pilot and main burner, snap action thermostat, pilot adjustment and pilot gas filter ... all in one unit, attractively packaged in a new hard-baked gray enamel finish!

Men At Work

IN THE GAS UTILITY INDUSTRY

● The board of directors of The Peoples Gas Light and Coke Company has elected **Frank L. Griffith** and **Karl B. Nagler** to the newly created office of senior vice

F. L. Griffith

K. B. Nagler

presidents. Other executive changes included: **Leslie A. Brandt,** vice president of the company, who has been elected to the additional office of comptroller and will be in charge of all accounting and related functions. **Stuart J. Barrett,** formerly assistant vice president and assistant comptroller, has been elected a vice president

L. A. Brandt

E. A. Manlove

and will be responsible for industrial relations; **Emory A. Manlove,** formerly assistant vice president, has been elected vice president and will be in charge of operation; **Ralph L. Braucher,** assistant vice president, has been elected to the additional position of assistant comptroller, and **Robert M. Drevs,** secretary of the company, has been elected to the additional position of assistant vice president.

● **Robert D. Crane** has been appointed to the newly created position of manager of purchasing of Dresser Manufacturing Division, Dresser Industries, Inc. **Lyman D. Warner** has been appointed manager of subsidiaries of the company.

● **Charles E. Smith** has been appointed assistant national service director of Robertshaw-Fulton Controls Company. He was formerly manager of the Product Service Division of A. O. Smith Corporation.

● **O. W. Brewer,** controller and assistant secretary of the American Gas Association, has retired after 35 years of continuous service. Succeeding him as controller is **Robert J. Cutting.**

● **E. Fred Lockard** and **Thomas Debevoise** have been appointed divisional managers of The Peoples Natural Gas Company of Pittsburgh. Lockard will have charge of the Northern Division, comprising Blairsville, Indiana, Kittanning, New Kensington, and Vandergrift. Debevoise will oversee operations in the Eastern Division, comprising Johnstown and Altoona.

● **J. P. "Pete" Watkins,** former Buckeye manager, has been promoted to construction supervisor—field, in the System Gas Department of Arizona Public Service Company. His new offices will be located in Phoenix.

● Recent personnel changes at the Ohio Fuel Gas Company include: **Jay M. Parker,** assistant division plant foreman in Zanesville, who has been placed in charge of the company's Newcomerstown office; **Charles L. Paul,** who has been named Columbus district customer service manager; **Robert C. Stewart,** who has been named manager of distribution plant operations; **Elden H. Davis,** who has been named manager of customer service operations; **C. E. Bowman,** who has retired after 39 years in the gas measurement department, and **Arthur R. Goodman,** who has been named superintendent of communications.

● **Arthur Beuckman,** assistant general foreman, has been promoted to general foreman of the Gas Shop at Rochester Gas and Electric Company.

● **William L. Schubert,** general manager-laundry equipment, Philco Corporation, has been elected a director of the American Home Laundry Manufacturers' Association. He fills the vacancy created by the resignation of **James Hufnagel,** formerly of Philco, who has left the industry.

● **Albert E. Miller,** director of finance and accounts, Philadelphia Gas Works Division, The United Gas Improvement Company, has been elected to membership in the Controllers Institute of America.

● **E. C. Deshautreau, Jr.,** manufacturers agent of Kenner, Louisiana, and **Walter C. Carolan Company,** Kansas City, Missouri, have been appointed regional sales representatives of Askania Regulator Company.

● **Robert B. Smith,** coordinator of research for the Columbia Gas System Corporation, has been temporarily assigned to the American Gas Association to fill the newly-created post of manager of air conditioning research under the PAR Plan.

● **Gerald L. Andrus,** vice president of New Orleans Public Service Inc., has been named chairman of the newly organized corporations division of Tulane University's Fund.

G. L. Andrus

F. M. Foster

● **Frank M. Foster,** vice president of Southern California Gas Company, has been elected a member of the board of directors. He will continue to be responsible for sales, advertising, and public relations functions of the company.

1897 1957

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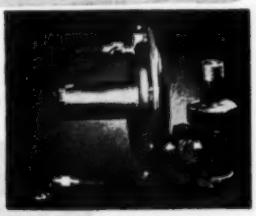
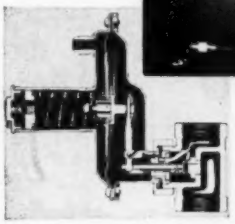
A REGUATOR, BREATHER VENT AND CATHODIC INSULATOR IN ONE PACKAGED UNIT





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TYPE 51-R FOR EVERY INSTALLATION

EXCLUSIVE FEATURES NOT FOUND ELSEWHERE

Exceptionally high relieving capacity obtained by new type internal relief valve. Remarkable by-pass check valve prevents over-shooting of low pressure and damage to meter.

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CONNECTICUT LIGHT & POWER

Typical "two-tank" Drake-town Propane-Air Plant installation for natural gas standby and augmentation for Connecticut Light & Power Co., Winsted, Conn.

Many other large and small manufacturers and utilities rely on Drakетown for absolute dependability of gas supply; automatic or manual operation with savings all down the line. Over thirty-five years of gas engineering experience is built into every Drakетown Plant.

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Members of: American Gas Ass'n, LP-Gas Ass'n, American Petoleum Institute, National Fire Protection Ass'n, Canadian Gas Ass'n, Agricultural Ammonia Institute.

Personals

● **S. Merle Hardison** has been appointed district manager in Philadelphia for Tube Turns. He succeeds **W. E. Geiser,** who has returned to the headquarters staff in Louisville.

● Two executives of Pittsburgh Coke & Chemical Company have been promoted to head activities of the expanded Protective Coatings Division. They are **Norman T. Shideler** who has been elected president of Insul-Mastic, Inc., a newly acquired subsidiary producing for the Protective Coatings Division, and **Arthur E. Gray,** who has been named to succeed Shideler as the division's general manager. Shideler will also act as technical adviser to the vice-president-Chemical Divisions.

● **Ralph H. Engstrom** has been named assistant vice president in charge of sales for the RegO Division of The Bastian-Blessing Company. This office has been newly created as a part of the general expansion program of the RegO Division.

● Three appointments and one transfer in sales personnel have been announced by Lunkenheimer Company of Cincinnati. They are: **Glenn Hill, Bob Miles** and **Lowell Barton** have been appointed sales representatives, and **Phil Stokes** has been transferred from the New York offices to the Iowa territory.

● **W. K. Venatta** has been promoted to manager of Oronite Chemical Company's Oak Point, Louisiana, plant. He succeeds **T. I. Clausen,** who is being transferred to the California Research Corporation.

● **A. Phillip D'Haem** has been appointed to the new position of director of export sales for Gar Wood Industries, Inc. He was formerly European director of sales with headquarters in Paris.

● **E. P. Heiles,** controller, **C. Cone,** chief engineer, Industrial Division, and **J. I. Trimble,** chief engineer, Janitrol Divisions, have been elected vice presidents of Surface Combustion Corporation.

● **Clyde D. Alstadt** has retired as supervisory engineer in the gas engineering department of the Columbia Gas System Service Corporation, after 40 years of service with the many system companies.

● American Meter Company has announced two sales appointments — **J. P. Wilson III** has been named to the position of sales representative for the Atlanta sales district and **Clifford E. Alden** has been named to the position of sales engineer for the Wynnewood, Pennsylvania, sales district.

Leland C. Ginn

Leland C. Ginn, manager of the Dallas sales office and branch warehouse of the Coleman Company, Inc., died in Dallas recently following a brief illness. He was 41.

George A. Burrell

Colonel George A. Burrell, former president of Atlantic States Gas Company, and vice president, Commonwealth Gas Corporation, died in New York recently after a long illness. He helped initiate Chemical Warfare Service, U. S. Army, World War I; discovered helium supply in Texas and initiated the U. S. Government Helium Program in 1917, and was in charge of gas investigations for the U. S. Bureau of Mines from 1908 to 1916.

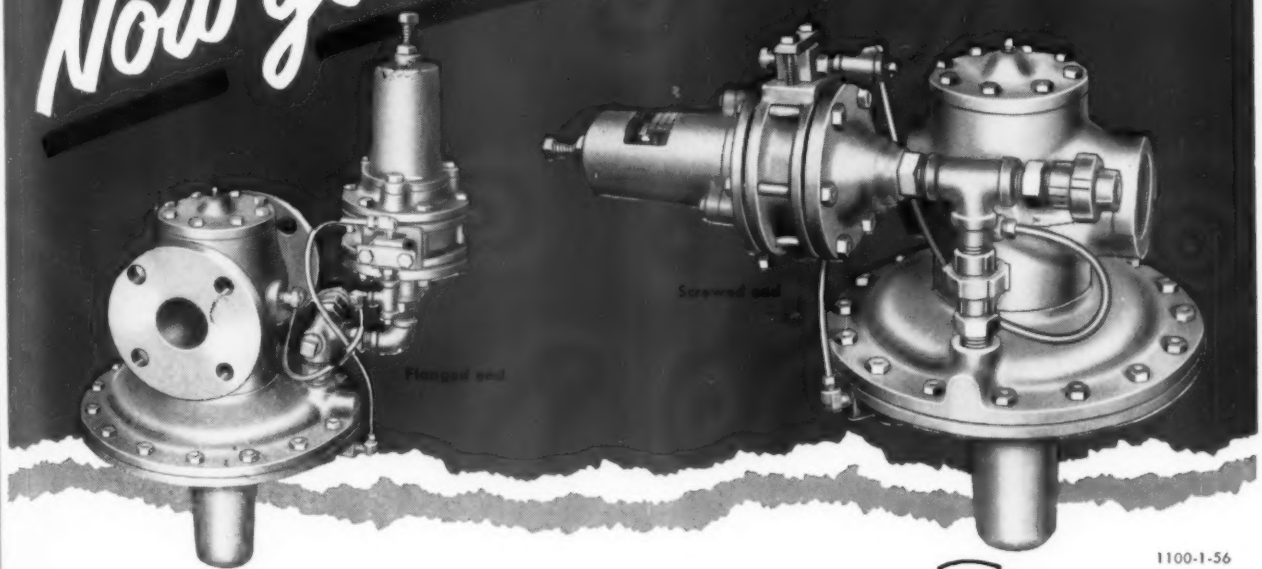
LINE PRESSURE GOING UP!

MEMO
FROM THE OFFICE OF THE PRESIDENT

Geo:— Considering raising line pressure Better check this— Now good up to 400 psi Rehm.

Chaplin-Fulton '1100' REGULATOR

Now good up to 400 psi



1100-1-56

Now, more versatile than ever—good up to 400 psi. Your choice of three body assemblies—

2" flanged 250 lb.	rated for 400 psi
2" screwed end	rated for 400 psi
2" flanged 125 lb.	rated for 175 psi

All suitable for outlet pressure range from ounces to 150 psi with no change required in regulator or pilot—just change the pilot spring. It's accurate—versatile—compact! A good buy!

Why stock two, when Model '1100' will do?

And, if 400 psi is too low, why not try the all-steel Model '1200', good up to 1200 psi inlet and 600 psi outlet?

Full information on request.

ACCURATE CP MFG. CO. DEPENDABLE

Chaplin-Fulton
MANUFACTURING COMPANY
Pittsburgh 25, Pennsylvania

takes just half the space . . .

OF CONVENTIONAL, OLD STYLE REGULATOR AND METER SETS

The Sprague Combination Meter And Regulator with Sprague Meter Loops will give you an economical, modern meter set for both gas measurement and pressure control — in one, streamlined, functional unit. A unit that saves you money through fewer parts requiring less labor to install. Only five items are necessary — Sprague Combination Meter And Regulator, two Sprague Meter Loops and two connection swivels — with only four pipe threads and two connections to make for each installation.

Sprague

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